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Western Mining in the Twentieth Century
Oral History Series

Catherine C. Campbell

IAN AND CATHERINE CAMPBELL, GEOLOGISTS:
TEACHING, GOVERNMENT SERVICE, EDITING

With introductions by
Gordon B. Oakeshott
and
Donald W. Peterson

An Interview Conducted by
Eleanor Swent
in 1988

Since 1954 the Regional Oral History Office has been interviewing leading participants in or well-placed witnesses to major events in the development of Northern California, the West, and the Nation. Oral history is a modern research technique involving an interviewee and an informed interviewer in spontaneous conversation. The taped record is transcribed, lightly edited for continuity and clarity, and reviewed by the interviewee. The resulting manuscript is typed in final form, indexed, bound with photographs and illustrative materials, and placed in The Bancroft Library at the University of California, Berkeley, and other research collections for scholarly use. Because it is primary material, oral history is not intended to present the final, verified, or complete narrative of events. It is a spoken account, offered by the interviewee in response to questioning, and as such it is reflective, partisan, deeply involved, and irreplaceable.

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Ian and Catherine C. Campbell
San Francisco, 1977

TABLE OF CONTENTS -- Catherine C. Campbell

PREFACE	i
INTRODUCTION by Gordon B. Oakeshott	vii
INTRODUCTION by Donald W. Peterson	ix
INTERVIEW HISTORY	xi
BRIEF BIOGRAPHY	xiv
I CATHERINE'S EARLY YEARS	1
Father, John Hildreth Chase	1
Mother, Eliza Dixon Robbins	3
Childhood in Youngstown, Ohio, 1913-1923	5
II CATHERINE'S HIGHER EDUCATION	12
Oberlin College, 1923-1927	12
Summer Study in Colorado	14
More About Eliza Robbins Chase	16
An Interlude---Teaching at Mt. Holyoke College, 1927-1929	17
Summer Field Trip to Europe with Kirtley Mather, 1928	21
Graduate Study at Radcliffe and Harvard, 1929-1931	23
Meeting Ian Campbell	27
III IAN CAMPBELL'S BACKGROUND	30
Forebears	30
The Dakota Years	31
The Eugene, Oregon, Years	33
IV THE YEARS TOGETHER, 1930-1978	38
The Harvard Years, 1930-1931	38
California Institute of Technology and Pasadena, 1931-1942	41
The World War II Years, 1941-1946	52
The Post-World War II Years in Pasadena	55
The Fabulous 1960s in San Francisco	79
The Retirement Years in the 1970s	107
V THE YEARS ALONE	127
TAPE GUIDE	134
APPENDIX	135
INDEX	167

ILLUSTRATIONS

Frontispiece, Catherine and Ian Campbell, 1977	
Catherine Chase Campbell, 1955	28a
Ian Campbell, New Mexico, 1943	46a
Branner Club minutes, February 23, 1937	50a
Miss Federal Employee, 1960	68a
Dugald and Catherine Campbell, 1985	72a
Ian Campbell, 1970	86a
Letter from William Pecora	96a
"Wonderment" by Frank Calkins	98a
Tribute to Catherine Campbell by Tom Dibblee	104a
Campbellian Epoch geologic correlation chart	114a
Ian Campbell and Harrison "Jack" Schmitt, 1973	124a

PREFACE

The oral history series on Western Mining in the Twentieth Century documents the lives of leaders in mining, metallurgy, geology, education in the earth and materials sciences, mining law, and the pertinent government bodies. The field includes metal, non-metal, and industrial minerals, but not petroleum.

Mining has changed greatly in this century: in the technology and technical education; in the organization of corporations; in the perception of the national strategic importance of minerals; in the labor movement; and in consideration of health and environmental effects of mining.

The idea of an oral history series to document these developments in twentieth century mining had been on the drawing board of the Regional Oral History Office for more than twenty years. The project finally got underway on January 25, 1986, when Mrs. Willa Baum, Mr. and Mrs. Philip Bradley, Professor and Mrs. Douglas Fuerstenau, Mr. and Mrs. Clifford Heimbucher, Mrs. Donald McLaughlin, and Mr. and Mrs. Langan Swent met at the Swent home to plan the project, and Professor Fuerstenau agreed to serve as Principal Investigator.

An advisory committee was selected which included representatives from the materials science and mineral engineering faculty and a professor of history of science at the University of California at Berkeley; a professor emeritus of history from the California Institute of Technology; and executives of mining companies.

We note with much regret the death of two members of the original advisory committee, both of whom were very much interested in the project. Rodman Paul, Professor Emeritus of History, California Institute of Technology, sent a hand-written note of encouragement just a few weeks before his death from cancer. Charles Meyer, Professor Emeritus of Geology, University of California at Berkeley, was not only an advisor but was also on the list of people to be interviewed, because of the significance of his recognition of the importance of plate tectonics in the genesis of copper deposits. His death in 1987 ended both roles.

Thanks are due to other members of the advisory committee who have helped in selecting interviewees, suggesting research topics, and raising funds.

Unfortunately, by the time the project was organized several of the original list of interviewees were no longer available and others were in failing health; therefore, arrangements for interviews were begun even without established funding.

The project was presented to the San Francisco section of the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME) on "Old-timers Night," March 10, 1986, when Philip Read Bradley, Jr. was the speaker. This section and the Southern California section provided initial funding and organizational sponsorship.

The Northern and Southern California sections of the Woman's Auxiliary to the AIME (WAAIME), the California Mining Association, and the Mining and Metallurgical Society of America (MMSA) were early supporters. Several alumni of the University of California College of Engineering donated in response to a letter from Professor James Evans, the chairman of the Department of Materials Science and Mineral Engineering. Other individual and corporate donors are listed in the volumes. The project is ongoing, and funds continue to be sought.

Some members of the AIME, WAAIME, and MMSA have been particularly helpful: Ray Beebe, Katherine Bradley, Henry Colen, Ward Downey, David Huggins, John Kiely, Noel Kirshenbaum, and Cole McFarland.

The first five interviewees were all born in 1904 or earlier. Horace Albright, mining lawyer and president of United States Potash Company, was ninety-six years old when interviewed. Although brief, this interview will add another dimension to the many publications about a man known primarily as a conservationist.

James Boyd was director of the industry division of the military government of Germany after World War II, director of the U.S. Bureau of Mines, dean of the Colorado School of Mines, vice president of Kennecott Copper Corporation, president of Copper Range, and executive director of the National Commission on Materials Policy. He had reviewed the transcript of his lengthy oral history just before his death in November, 1987.

Philip Bradley, Jr., mining engineer, was a member of the California Mining Board for thirty-two years, most of them as chairman. He also founded the parent organization of the California Mining Association, as well as the Western Governors Mining Advisory Council. His uncle, Frederick Worthen Bradley, who figures in the oral history, was in the first group inducted into the National Mining Hall of Fame, Leadville, Colorado, in 1988.

Frank McQuiston, metallurgist, vice president of Newmont Mining Corporation, died before his oral history was complete; thirteen hours of taped interviews with him were supplemented by three hours with his friend and associate, Robert Shoemaker.

Gordon Oakeshott, geologist, was president of the National Association of Geology Teachers and chief of the California Division of Mines and Geology.

These oral histories establish the framework for the series; subsequent oral histories amplify the basic themes.

Future researchers will turn to these oral histories to learn how decisions were made which led to changes in mining engineering education, corporate structures, and technology, as well as public policy regarding minerals. In addition, the interviews stimulate the deposit, by interviewees and others, of a number of documents, photographs, memoirs, and other materials related to twentieth century mining in the West. This collection is being added to The Bancroft Library's extensive holdings.

The Regional Oral History Office is under the direction of Willa Baum, division head, and under the administrative direction of James D. Hart, director of The Bancroft Library.

Interviews were conducted by Malca Chall and Eleanor Swent.

Willa K. Baum, Division Head
Regional Oral History Office

Eleanor Swent, Project Director
Western Mining in the Twentieth
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Interviews Completed or in Process, November 1989

Horace Albright, Mining Lawyer and Executive, U.S. Potash Company, U.S. Borax, 1933-1962, 1989

James Boyd, Minerals and Critical Materials Management: Military and Government Administrator and Mining Executive, 1941-1987, 1988

Philip Read Bradley, Jr., A Mining Engineer in Alaska, Canada, the Western United States, Latin America, and Southeast Asia, 1988

Catherine C. Campbell, Ian and Catherine Campbell, Geologists: Teaching, Government Service, Editing, 1989

Helen R. Henshaw, Recollections of Life with Paul Henshaw: Latin America, Homestake Mining Company, 1988

Lewis L. Huelsdonk, Manager of Gold and Chrome Mines, Spokesman for Gold Mining, 1935-1974, 1988

Frank Woods McQuiston, Jr., Metallurgist for Newmont Mining Corporation and U.S. Atomic Energy Commission, 1934-1982, 1989

Gordon B. Oakeshott, The California Division of Mines and Geology, 1948-1974, 1988

Samuel S. Arentz, Jr. (Escalante Mine), in process

James T. Curry, Sr. (Calaveras Cement Company), in process

Donald Dickey (Oriental Mine), in process

James M. Gerstley (U.S. Borax), in process

George Heikes (tungsten, zinc), in process

A. I. Johnson (Black Hills mining), in process

Evan Just (Engineering & Mining Journal, Cyprus Minerals, Stanford University), in process

Plato Malozemoff (Newmont Mining Corporation), in process

Langan Swent (San Luis, Homestake, uranium mining), in process

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* Deceased during the period of the project

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INTRODUCTION by Gordon B. Oakeshott

It is both a privilege and an honor to introduce Dr. Catherine Chase Campbell. Known to her young colleagues at the United States Geological Survey as "Catherine," she is affectionately called "Kitty" by her many older friends.

When I was asked by the Regional Oral History Office of The Bancroft Library for a recommendation of "who to interview next," I immediately thought of Kitty Campbell, for two reasons: her own unheralded but significant contributions to the geological sciences, and her long years as Ian Campbell's consort and helpmate. Best yet: she had a diary!

Catherine had a classical education in geology in the late 1920s when young ladies had an uphill battle to compete with young men. From my own observation during the same period, the few girls in our science had to prove themselves by being just a shade more competent than their male colleagues. Catherine got her B.A. and M.A. in geology from Oberlin and then a Radcliffe/Harvard Ph.D., plus honors in Phi Beta Kappa. At Harvard, she came under the influence of the late great teacher Kirtley Mather and, most importantly, met Ian Campbell, in 1929 a young instructor in mineralogy and petrology.

Kitty and Ian were married in 1930. From then to 1978, when Ian died, they were a closely knit team. In 1931 Ian accepted the position of assistant professor of geology at the California Institute of Technology. He had extraordinary talent as a teacher and in his contacts with his fellow geologists. He was generally loved by both. Whether consciously or not, he early subordinated his considerable talents in geological research to teaching and serving his fellow geologists in professional organizations. Through the years, he demonstrated a great ability to communicate with his fellows in their interests.

I am sure that Ian and Kitty early on had an agreement, whether tacit or voiced, that his was the career in geology and that it was Kitty's role to support him. This she did, efficiently and happily, for nearly fifty years.

I knew the Campbells from 1931 on, at first casually during Ian's Cal Tech years, and then on a close day-to-day basis during the decade of the 1960s when he was chief of the State Division of Mines and Geology and I was his deputy.

During all the Cal Tech and State years, Kitty was constantly at his side, literally and figuratively. I remember her taking two steps to Ian's long-legged one as they trudged up Nob Hill after some meeting in downtown San Francisco. Kitty was and is a great walker, but could not match Ian's strides. Very frequently at national geological

meetings, Ian would have an agenda it was impossible to meet single-handed, so Kitty would unobtrusively sit in for him to fulfill a secondary obligation. During the Division of Mines days he would always assign me a series of contacts also, and then later demand a blow-by-blow account of the results.

Catherine is a natural as a geological editor. Well trained in English and geology, she constructively criticizes technical manuscripts with technical competence and editorial sense. I am personally grateful for the work she has done for me. She has never dismissed my efforts with a "Good paper, Gordon," but always comes up with some suggestions which make me think that I should have done just that in the first place.

Kitty's first professional experience in editing came with World War II when she started with the Army Air Force and later with the U.S. Navy. In 1961, after they came to San Francisco, it was logical that she take a position of editor for the U.S. Geological Survey at Menlo Park. Past retirement, she now goes to Menlo Park every Tuesday. I'm sure that every geologist, as I do, feels that his paper is the better for Catherine's kindly and helpful criticism.

During Ian's tenure with the state my late wife, Bee, and I were often at technical meetings with the Campbells. After he left us, in my bachelor years I continued to take Kitty to our local technical meetings. Now my wife Lucile and I take her to such meetings as the San Francisco section of the Association of Engineering Geologists, selected meetings of the Commonwealth Club, the Fellows meetings of the Academy of Sciences in Golden Gate Park, and we meet (less and less often) at National Geological Association meetings.

Kitty continues to live in the beautiful co-op on Nob Hill in San Francisco which she shared with Ian for seventeen years, with a sensational view of North Bay, Alcatraz, and the Golden Gate. She swims often in a nearby pool. Occasionally she enjoys a visit with son Dugald, who is a civil engineer in Whittier, California, and two grandchildren, or goes to the vacation home she and Ian built on the north side of the San Bernardino Mountains not far from Victorville.

Lucile and I enjoy the friendship of this lovely person; I look forward to reading her oral history.

Gordon B. Oakeshott, Former Chief,
California Division of Mines and Geology

Oakland, California
September, 1988

INTRODUCTION by Donald W. Peterson

Catherine Campbell's oral history will convey some intriguing information about people and events, it will provide perceptive insights into a life shared with her multi-talented husband, Ian, and it likely will spontaneously reveal aspects of her warm and gracious personality. As a long-time beneficiary of this warmth and graciousness, it is a pleasure to share some experiences.

Some twenty-five years ago I found myself in an awkward and uncomfortable position, having just been assigned the two-year task as Chief of the Technical Reports Unit for the U.S. Geological Survey in Menlo Park. This included supervision of a group of about fifteen people responsible for editing and otherwise preparing for publication the papers written by scientists in the Western Region. I knew nothing about editing or publishing and had essentially no supervisory experience. Fortunately the lady who was to be my principal assistant was not only a skilled scientific editor but was also a wise, understanding, and experienced supervisor--that lady was Catherine Campbell.

Further, she was the wife of Ian Campbell, Chief of the California Division of Mines and Geology, who previously had been on the geology faculty at Cal Tech. He had been one of the all-time favorite professors who for decades had guided students through the mysteries and fascination of petrology as he helped them learn how the characteristics of rocks can be utilized to determine their origin and history. I had been among those students fifteen years earlier, and afterward Ian had provided reference letters both for jobs and for admission to graduate school. Now I was to be his wife's boss! How would this work out?

I need not have felt apprehensive. The Campbells must have been amused and pleased at this turn of events, for Ian wrote an enthusiastic and strongly supportive letter as I shakily embarked on my new role. Catherine served as a patient and perceptive teacher, both for editing scientific reports and also for methods in supervising people. She had a marvelous knack of quietly making offhand suggestions to which I quickly learned to pay very close attention, for they constituted sound and practical training in supervision. She kept out of the limelight herself, yet she was ever ready with valuable advice. Later, when I was sent to a training course in supervisory methods, I found I had already learned most of the recommended techniques efficiently and painlessly simply through watching and listening to Catherine. It is evident that in quite diverse ways both Ian and Catherine have been vitally important mentors.

Many others have had similar experiences. An instinct for helping people, whether in coping with problems or toward finding and fulfilling their highest potential, is one of Catherine's characteristics. A close friend who worked for her when she was supervisor of the technical writing unit at the Naval Ordnance Test Station in Pasadena extols her

talents and insights: "She is the best boss I ever had--no one else comes close, though I've had some really good ones by any standard." Catherine has a deep and abiding interest in all of her coworkers; she is always ready with a sympathetic and understanding ear to help them deal with problems, and she is constantly alert for ways for each individual to make best use of his or her talents. Still, when needed, she exercises firm but fair discipline. Her performance and attitude could well serve as a type example for all supervisors, and, happily, her supervisory, writing, and editing skills have been recognized by both the Navy and the Geological Survey, as she has earned a long list of special awards.

Personally she has a quiet manner and at times appears deceptively diffident and shy, but this is apparent rather than real, and the steel in her character is lifelong. She earned her Ph.D. at Radcliffe, but most of her classes and research were at Harvard when female graduate students in geology were rare and male chauvinism was rampant. Although her whole character is the very antithesis of militant feminism, her pragmatic and wise advice to young women who are entering male-dominated fields is that they simply must perform better than the men to make the grade. However, she had a good eye for men, for she married one of the best!

Although well past her eightieth birthday, she is trim and spry physically and is vigorously active both professionally and socially. She has long blended firm self-discipline with a capacity for fully enjoying genuine pleasures. During her years at the navy lab she was noted for a single red apple decorating her desk each morning; this constituted her entire lunch. At the Geological Survey her lunch changed to a small bowl of soup or dish of cottage cheese. When admonished over this spartan fare, she would reply that if her lunches were larger she would be unable to share with Ian the dark beer he enjoyed so much on their hikes together!

She continues to work at the Geological Survey one day a week, still giving the benefit of her expert editorial eye to fortunate authors who henceforth emerge as better writers. At the time of her official retirement a number of years ago, her colleagues presented her with a Correlation Chart, showing notable events of her career and the impressive influence that papers edited under her supervision have had on the science of geology. We are fortunate that her oral history will document her own inside story on the facts behind this chart. It is a privilege to supplement that history by relating the truly high esteem and deep affection in which she is held by all her colleagues and friends.

Donald Peterson
Geologist, U.S. Geological Survey
Chief, Hawaiian Volcano Observatory (1970-75)
Cascades Volcano Observatory (1980-85)

October 1988
Menlo Park, California

INTERVIEW HISTORY

Catherine Campbell was selected as the first woman professional to be interviewed for the series on Western Mining in the Twentieth Century. She earned a Ph.D. in geology from Harvard in 1933, when a Radcliffe student (as she had to be designated) could only study in a Harvard class if all the men gave their approval, and even then she had to take her examinations separately. As she recounts in her oral history, she nevertheless enjoyed a lively social and intellectual life there.

Dr. Catherine Campbell has received twelve Civil Service Awards during her long career as a technical editor: from the U.S. Navy, four Outstanding Performance Awards, four Superior Achievement Awards; from the U.S. Geological Survey [USGS], two Outstanding Performance Awards, one Meritorious Civilian Award, one Superior Achievement Award. She was named "Miss Federal Employee" in 1960. At the age of 84, she still commutes one day a week to her desk at the U.S. Geological Survey in Menlo Park. On three days each week she swims half a mile at a nearby San Francisco club. It is surprising to learn from her oral history that she was a sickly child.

Her New England family background, as she describes it, was one of liberty of thought combined with social responsibility. Her marriage to geologist Ian Campbell was singularly happy; they met as fellow Harvard students, and continued their joint careers for many decades in symbiotic compatibility. Ian Campbell died in 1978.

As a faculty wife at California Institute of Technology, she played badminton, did community volunteer work, and was a hostess and mother of a son, Dugald. In addition, she unofficially edited dissertations and advised graduate students. She and her professor husband shared not only their professional interests but also, in the domestic sphere, an interest in home design and furnishing. Their house, designed by architects Adrian Wilson and Erle Webster, was featured in magazine articles at the time of its construction in 1936.

World War II burdened Catherine Campbell with a "Victory garden" but it also brought her back into the world of paid work. She first worked for the Army Air Force and then edited technical reports for the U.S. Naval Ordnance Test Station, earning awards for her skill as editor and production manager. When Ian Campbell became California state geologist and head of the Division of Mines and Geology, and they had to move to San Francisco, her career reached a critical point. She went to work in 1961 for the USGS, and was able to know the great satisfaction of combining her accomplishments both as geologist and technical editor, becoming head of text editing.

After the Alaska earthquake of 27 March 1964, she was editor for the resulting series of twenty-eight USGS reports, including six professional papers, completed in 1970. After a brief retirement, she was called back for another major responsibility as editor for the San Francisco Bay Region Project, a joint effort of USGS, U.S. Department of Housing and Urban Development, and Association of Bay Area Governments; it comprised over seventy maps, six technical reports, and eight interpretive reports.

During the oil crisis of 1974, she served the Department of Interior on an emergency task force handling distribution of oil allocations; she provides a vivid description of that hectic period.

Soon after moving to San Francisco, the Campbells bought an apartment in a building under construction at the corner of Clay and Jones, and again enjoyed a beautiful home in contemporary style, their Danish furniture now enhanced by a magnificent view of San Francisco Bay. A telescope stands near one window, and on the table lies the elegant book on minerals which Ian Campbell and Arthur Court produced together. Shelves are filled with many books, old and new.

Catherine Campbell is a Fellow of both the California Academy of Sciences and the Geological Society of America; her memberships include the Association of Earth Science Editors, Geoscience Information Society, Northern California Geological Society, Peninsula Geological Society, and Society for Technical Communication.

She also took part in most of her husband's many activities. He was president of the American Association of State Geologists, the American Geological Institute, the Geological Society of America, and the Californai Academy of Sciences. He received numerous awards and honorary memberships, served as chairman for a visiting committee for the Harvard Board of Overseers, and was a member of numerous other professional organizations and committees. He served as president of both the Branner Club (geologists of southern California) and the LeConte Club (geologists of northern California). In 1966 he became the Honorable Ian Campbell, Director of the California Department of Conservation. She says in the oral history, "I don't know when that happens, how far up you have to go to become 'Honorable'. Anyway, for six months he had that title."

The Campbells have kept in touch with many friends from college days, former students, and colleagues, categories which very often overlapped. Christmas letters were illustrated with photos from their wide-ranging travels. The minutes of a Branner Club meeting, the "wonderment," and the chart of the Campbellian Epoch which illustrate this volume are fine examples of the whimsical humor which embellished their lives.

The invitation to participate in the series was sent on 3 November 1987. A planning session took place on 9 November 1987. Catherine Campbell consulted her diaries and carefully planned for the five interviews which took place in her home between 5 February and 18 July 1988. The usual procedure of the Regional Oral History Office is for the interviewer to edit the transcript lightly and send it to the narrator for review. In this case, Mrs. Campbell very graciously assumed the role of editor, and did the bulk of that task herself. She reviewed the manuscript meticulously, making minor corrections and retaining the conversational flavor of the interviews. It was a special delight to work with her in this professional capacity.

When the Loma Prieta earthquake occurred, 17 October 1989 at 5:04 p.m., Catherine was standing outside the USGS complex in Menlo Park, waiting for the bus which she mentions affectionately in her oral history. She told me that she was standing by a large person who kept her from being hurled to the ground. It took two and a half hours to get to San Francisco, which by then, with no electricity, was pitch dark. A young man who was also on the bus walked up the steep hill with her as they picked their way through streets filled with rubble. Once arrived at her address, she had to climb to her ninth-floor apartment. She was prepared for emergencies, with food and water supplies and a rechargeable Black & Decker flashlight plugged in and ready to provide sixteen hours of light. Equally important, during the next few days of isolation, was her readiness to take a lively scientific interest in the geologic event.

In her oral history, speaking of her husband's service on the Seismic Hazards Geology Committee for San Francisco, she says, "Nothing really ever came from that committee. There should have been, but it wasn't a very active committee." Future city supervisors will doubtless make more use of such advisors.

Introductions to the oral history were written by two close colleagues and friends. Gordon Oakeshott served Ian Campbell as deputy chief of the California Division of Mines and Geology, and later succeeded him as chief. Donald Peterson was a student in Ian Campbell's petrology class at Cal Tech and fifteen years later was Catherine Campbell's boss as head of the Technical Reports Unit at USGS.

The tapes of the interviews are deposited in The Bancroft Library. Ian Campbell's papers are deposited at the American Heritage Center, Laramie, Wyoming.

Eleanor Swent, Project Director
Western Mining in the Twentieth Century Series

November 1989
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BIOGRAPHICAL INFORMATION

8/25/88

(Please write clearly. Use black ink.)

Your full name Catherine Chase Campbell

Date of birth July 1, 1905 Birthplace New York City, N.Y.

Father's full name John Hildreth Chase

Occupation Social Worker Birthplace Atlanta, Georgia

Mother's full name Eliza Dixon Robbins

Occupation House wife - volunteer ^{worker} Social Birthplace Wethersfield, Conn.

Your spouse Ian Campbell (deceased)

Your children Dugald Robbins Campbell

Where did you grow up? Cambridge, Mass.; Youngstown, Ohio

Present community San Francisco, California

Education Chester College A.B. A.M. 1927

Radcliffe/Harvard A.M. 1930 Ph.D. 1931

Occupation(s) Technical Editor, Geologist

U.S. Naval Ordnance Test Station; U.S. Geological Survey

Areas of expertise Editing - Geology

Other interests or activities Swimming, Travelling, Reading

Organizations in which you are active Commonwealth Club, Metropolitan Club

I CATHERINE'S EARLY YEARS

[Interview 1: February 15, 1988] ##

Swent: Shall we just begin at the beginning?

Campbell: Start with the roots?

Father, John Hildreth Chase

Swent: You can start with the roots.

Campbell: All right, here we go. My father was John Hildreth Chase and he was born in Atlanta, Georgia, which seems like a strange place to be born, [laughs] for a New Englander. So I think I'll have to stop right away and jump back one generation to explain why his father and mother were in Atlanta, Georgia. They both were natives of Newburyport, New Hampshire. The Chases and the Tuttle had lived in Newburyport for generations. My grandmother was Maria Tuttle.

My grandfather, Thomas Noyes Chase, went to Dartmouth College and graduated sometime in the 1870s, I guess. Then he went back to Newburyport, he and his wife and baby daughter, and he taught there for a short time. But they became restless and felt that they needed to make a larger contribution than they were making in the little town of Newburyport.

The Civil War was over, the slaves were free, but my grandfather felt that the next big job was to educate the slaves. So he packed his wife and his little daughter and all their worldly goods in a buggy, and they went south to Atlanta, Georgia where he had an appointment at the University of Atlanta. He

This symbol indicates that a tape or segment of a tape has begun or ended. For a guide to the tapes, see page 134.

Campbell: became Dean of Atlanta University and was there for twenty-five years. And that's how my father happened to be born in Atlanta, Georgia.

After twenty-five years he retired, and he had one of the marvelous Carnegie pensions, which was the forerunner of the TIAA, the big insurance outfit that all the universities and colleges have now.

Swent: What does TIAA stand for?

Campbell: Teachers Insurance and Annuity Association.

Swent: Carnegie had endowed this pension fund?

Campbell: Yes, after twenty-five years of teaching, anyone was eligible--I think it was in higher education--for a Carnegie pension. Grandfather's widow had it for years and years after he died. Maria Tuttle had died in the late 1890s, and Grandfather married again. His second wife was much younger. But I remember that--we called her Aunt Helen--she lived on a Carnegie pension, [laughs] lived well, for many many years after most other pensioners had died off.

So my father went through elementary school in Atlanta. And then for secondary school they thought of course he had to go back to New England. By this time his sister Mary had graduated from Wellesley and had married a doctor, an M.D., who was practicing in Bellows Falls, Vermont. It seemed logical to send my father to prep school in Vermont so that he could go for vacations to his sister's house.

He went to the Vermont Academy in Middlebury, Vermont. When he graduated from there his parents sent him to Amherst for his college years. After his background in Atlanta, he naturally fell into sociology for what he considered his life work, following in his father's footsteps. So he majored in sociology. But one of the courses at Amherst that he was most interested in was geology, which was taught by one of the famous geologists of the last century, Benjamin K. Emerson. I remember hearing plenty about Benjamin K. Emerson in my childhood.

My father went to Columbia for a master's degree, again in sociology. Then he took a job in a settlement house in the Lower East Side of New York, the University Settlement, where he worked with the poor people in the tenements. At this point I think I'll leave my father and go to my mother.

Mother, Eliza Dixon Robbins

Campbell: Now I'll go back to roots on my mother's side of the family.

My mother's name was Eliza Dixon Robbins and she came from an old Wethersfield, Connecticut, family. She was born in Wethersfield. There were three Robbins brothers who lived fairly close to each other; each married, each had families. So all this group of cousins, Robbins cousins, grew up together in a big happy family.

One of the cousins was Catherine, for whom I was named. In still another family was Jane Robbins who went to Wellesley and then to Johns Hopkins for her M.D. She was one of the early woman doctors. She had a great influence on my mother. She was a friend of Lillian Wald and a friend of Dr. Jane Addams who were great settlement workers in the Lower East Side of New York in the late 1880s.

Swent: I was going to ask if there was a connection with Jane Addams.

Campbell: Yes, they were very good friends.

My mother didn't go to college, but she went to kindergarten-training school; she had two years of kindergarten school.

Swent: That is to prepare to teach?

Campbell: To prepare to teach kindergarten. And Dr. Jane persuaded her to go down to the Lower East Side of New York to work in the College Settlement there.

Her main contribution there, really, was to run the summer camp. Children from the settlement houses would go to this big summer camp called Mount Ivy. I'm not sure that I ever knew exactly where it was, but anyway, it was in the country. And it was a great experience for the children from the Lower East Side who had never seen grass growing, never seen cows, or anything but city sidewalks and streets. It was a wonderful experience for the youngsters.

She was in charge of the Mount Ivy camp for several summers.

Swent: You called it University Settlement and then you called it College Settlement.

Campbell: There were two settlement houses.

Swent: They were different?

Campbell: They were different. My father was at University Settlement, and my mother was at College Settlement, but they got to know each other, of course.

Swent: Were they affiliated with a college or a university?

Campbell: I don't know. They were just names, I think. I know that the College Settlement was on Rivington Street. That's another name that sticks in my mind.

Anyway, my father and mother got acquainted, fell in love, and got married.

Swent: Did they live in a settlement house?

Campbell: Yes, they lived in a settlement house.

Swent: So it was a twenty-four hour job?

Campbell: Twenty-four hours, yes, they were there. At the end of summer camp in 1904, they were married the first of October. Then nine months to the day afterwards [laughs] I appeared on the first of July. We lived in the settlement house there for a little while. Of course I was a baby and remember nothing about it.

And then Father took the job as head of a settlement house in Cambridge, Massachusetts, and that is one of my first memories.

I was a very sickly child. I had a terrible case of diphtheria. My mother just barely pulled me through. Father had to leave home and live in the settlement house because the disease was so contagious. After I started pulling through diphtheria, I got paralyzed and couldn't walk and couldn't talk and my eyes were crossed.

Swent: You recall this.

Campbell: I recall this, I remember perfectly well getting out of bed and falling right on the floor. I was about five then, I think. Anyway, I got through it. I remember they fumigated the apartment, and it was a pretty ghastly experience. But I came through all right. And then I had every childhood disease under the sun—measles and mumps and chicken pox. Everything very hard! So my poor mother really struggled.

I started kindergarten in Cambridge and went through the first and second grades, and I had dancing school there. We went to see the glass flowers, and I remember walking with my mother under the Washington Elm and thinking about how exciting it was that Washington took charge of the troops right here where we were standing.

Swent: What did you wear?

Campbell: I remember especially what I wore to dancing school. My godmother--another very good friend of my mother's, who worked in the settlement house too and gave a lot of money to the settlement--had given me a sash, a roman sash, that she had bought in Italy. It was a perfectly beautiful pink and blue striped, as roman sashes are, and it had long fringes. And this upset me terribly because the fringes hung below my coat and when I walked on the street to go to dancing school I knew everybody was looking at those fringes and wondering what they were. [laughs] A silly thing to remember, but I do. Anyway, I was dressed properly for dancing school.

Childhood in Youngstown, Ohio, 1913-1923

Campbell: Then my father wanted more to do than run a settlement house. And he was asked to go to Youngstown, Ohio. This was when I was in the third grade. So we moved to Youngstown, Ohio. It was a great manufacturing town, a factory town, with iron and steel mills and lots of poor people, and lots of colored people, and lots of need for someone to keep them occupied, keep the boys out of trouble, and keep the girls out of trouble. He was there as a playground director or athletic director for the city, and he lived there till he died. So this was his major contribution.

In the summertime he had playgrounds at many of the schools and he ran all kinds of sports, like baseball games, and contests between schools, and track meets, and marble contests. Then, during the winter, they would have parent/teachers meetings in the evenings and programs. I know I would dance at some of these programs. I did the Highland fling and I did the sword dance, dressed up in a Scottish outfit.

My father made a tremendous contribution to the black element. He worked with the Booker T. Washington Settlement House. He worked with the Boy Scouts, and he just was a great source of good, I think, for the city. And when he died the city built a big beautiful memorial swimming pool, which was for both blacks and whites. It was a nice thing for the city to do.

As far as I was concerned, the contribution of my father was just tremendous. We spent many many hours walking in the woods. My mother came on many occasions, although she wasn't as great a walker as my father was. And I learned and learned. We collected, collected, collected; we had a big flower collection. And the mounting had to be done properly. I guess they knew my name at Ward's Natural History Museum in Rochester, New York,

Campbell: because I was writing them constantly for sheets to mount the flowers on, for the proper labels for the flower collection, the cases for the butterflies, the vasculum to put the flowers in when they were collected, mounting boards for the butterflies and moths, a thousand and one different things that all came from Ward's.

So I had collections of leaves, I had collections of ferns, I had collections of rocks, I had collections of minerals, I had collections of moths, I had collections of butterflies. And it was really fun.

Swent: You had good scientific training.

Campbell: Good scientific training. I was able to recite the geologic periods of Archean, Cambrian, Silurian, Devonian, etc. at the age of about eight--all this going back to B. K. Emerson at Amherst. Birds, of course, lists of birds.

Bird banding was one of my father's pet hobbies for a while in the Youngstown era. We had a dining room window that faced south out onto the back yard garden and we had a string that ran from a cage-like arrangement in the back yard up to the window. Bread crumbs and seeds were placed under the cage. Then, if a bird hopped in to get some bread crumbs, we would pull the string in the dining room window and the bird would get caught. Then we would reach in and get him out. This bothered me terribly. I just hated to take a bird out, but my father made me do it once in awhile. To the best of my knowledge, no bird with one of our bands was ever recorded anywhere. [laughs] Anyway, it was one of his ideas that we should do for a while.

Another thing that I might mention, speaking of that south window. We, often on our walks, would find cocoons of Prometheus or Polyphemus or Lunar moths, and we would bring those home, and put them in that south window in a vase with bittersweet. And, sometime during the spring, we would hear "tick, tick, tick, tick," and we would know something was going on in one of those cocoons. We would watch carefully and before very long, a moth would work its way out of the cocoon, and we would watch it all day long as its wings would expand and expand until we had a perfectly beautiful big Polyphemus, Prometheus, or Lunar moth.

Swent: Your father was obviously an enthusiast.

Campbell: [laughs] He certainly was. He did some crazy things. He had a pet crow at one time. [laughs]

Swent: I think you later married someone kind of similar, didn't you?

- Campbell: Well, no, not really. Father did some strange things, like the pet crow. [laughs] Our minister called him "Peter Pan" because he was a man who never really grew up. He always had the enthusiasm of a child.
- Swent: You have not mentioned on the tape, perhaps you want to include the age difference in your parents, it's interesting.
- Campbell: My mother was ten years older than my father. Her age was always a great secret. I didn't really ever know how old she was until I was grown and my father died. But she was forty when she was married, and they had no expectation of having a child. It was a great surprise when I appeared on the scene, and they were very pleased, of course. But she outlived him by eleven or twelve years in the end. He died when he was about sixty-eight and she died when she was ninety something.
- Swent: People didn't discuss their age then much, anyway, did they?
- Campbell: No. A lot of people kept ages secret.
- Swent: You said you were an only child; you have no brothers or sisters?
- Campbell: No brothers or sisters

Yale School

Another thing I mustn't forget is the school I went to in Youngstown. My parents sent me to a private school because I was such a sickly child. It was one of the greatest things they ever did for me because it was a very good school and very small. The classes were maybe eight or ten or twelve or something like that. So we had marvelous individual attention.

I still can quote at length from poetry we memorized, such as "What is so rare as a day in June?"--all kinds of things that we were taught in the early days and the songs that we learned; "Funiculi, Funicula," and things that I just wouldn't have been exposed to in public school at all. We went on lots of picnics with other friends; church friends for example.

And then I mustn't forget another important thing. My mother, as I said, went to kindergarten training and learned how to tell stories and read aloud. That was one of the greatest contributions she made to my life, because, as a child, she read aloud to me, and she was a beautiful reader. We read all manner of books; we read Dickens' Great Expectations, we read Oliver

Campbell: Twist, we read Martin Chuzzlewit, we read Don Quixote, we read Les Miserables. And I think that background helped me tremendously--even though I didn't know it at the time--in how to use words, and how to put words together, and the cadence of words that Dickens had for example. It all just sort of penetrated my brain without my knowing it.

Swent: Wonderful childhood!

Campbell: It was a wonderful, wonderful childhood.

One of the big years of my childhood was when I was eleven, the year before I had to pay full price on a train. My father and mother took me on a trip west. We went to Yellowstone Park. This was before they had automobiles in the park. He hired a cook, and camp wagon, and tents and things. My father and I each had a riding horse, and we set forth through the park. And this was at the height of my collecting of flowers, and we did a tremendous amount of collecting of wild flowers on this expedition. And, of course, many of the birds were different in the West. That was a great experience.

Before we went through Yellowstone, we stayed with Buffalo Bill's sister in the town of Cody while we were getting arrangements made for this expedition.

Swent: This is just before the World War?

Campbell: Yes, yes, it was before the World War. And it was a great trip.

Swent: It must have been.

Quinibeck Camp

Campbell: During these early years, when my mother was teaching me "culture" and my father was teaching me natural history, I was sent by my godmother, whom I mentioned before--Lura Liggett of Litchfield, Connecticut--to a girls' summer camp, called Quinibeck, on Lake Fairlee, Vermont. I was there 1918, '19, '20 and '21 summers. And that was a great experience for a shy little only child because I learned to do things. I learned to swim, I learned to ride horseback, I learned to paddle a canoe, row a boat, play tennis--do all the things that carried through my life and that I would never have learned in Youngstown.

Swent: You were obviously no longer sickly.

Campbell: No, I was no longer sickly and doing very well.

Campbell: My parents did a lot for me. They took me to see Pavlova dance, Galli-Curci sing, Schumann-Heink sing. We went to Cleveland to see operas and Shakespeare plays.

Swent: These things were all in Youngstown?

Campbell: Some were in Youngstown, yes.

Then, during World War I, we did quite a lot of gardening, we had war gardens. I knit sweaters and helmets and socks. Then we made bobbins. We wound thread on bobbins for the soldiers' sewing kits. I would say in my diary, "I wound 500 today," khaki on one side and white on the other. Winding bobbins, little bobbins a couple of inches long, seemed to be my greatest contribution to the war effort.

Swent: What about your diary? You kept a diary all your life?

Campbell: I have kept a diary starting January 1, 1917--

Swent: Very methodical--

Campbell: --and I still keep it up. It's just a line a day, but it's enough to remind me of things.

Swent: Yes, that's wonderful.

Campbell: But reading it took me too long. I couldn't read it all before this interview. I just looked at certain areas to see if there was something worthwhile to talk about.

Well, I think that gets me up to high school.

Swent: I have one other question that occurred to me. What do you think was the source of your grandparents' and your parents' willingness to serve, their desire to be in the service occupations. Was it religious? Were they church inspired?

Campbell: Yes, my mother and father were quite active in the Unitarian church, and I still contribute, not here but in Youngstown. They were active in getting the new church built and that sort of thing. And the minister and his wife were always very good friends. But that was not the motivation. I think it was just the way they were built.

Swent: Their parents--

Campbell: Their parents, yes. And Dr. Jane Robbins on my mother's side.

Swent: But this is a strong thing in the family.

Campbell: It's very strong in the family, yes.

I went to public school, after graduating from the little Yale School, to a big public high school.

Oh, one other thing before I leave this elementary school. My father bought a telescope, this was a six-inch reflector telescope, and he put it on the roof at Yale School. (The only reason it's named Yale is because it was on Yale Street.) Then we had evenings at school with parents and children coming. And, of course, we learned the constellations, and we looked at the planets, and we looked at the nebulae and all that. That was another whole big area of interest that my father brought to me and to the school and to friends. It was fun.

Swent: Is Youngstown in that part of Ohio that was part of Connecticut?

Campbell: Yes, the Western Reserve.

Swent: So, there was this very strong Connecticut connection?

Campbell: No, not really, not at all by the time we went to Youngstown.

Swent: I see. A lot of the place names are the same, though.

Campbell: Yes, a lot of them are.

Rayen School

Campbell: Then we go to high school. And here we go to a big public school, and I didn't know how I was going to get on. I graduated first in my class from Yale School.

Swent: At Yale were there both boys and girls?

Campbell: Both boys and girls, yes.

But I went right along getting good grades at Rayen School without any trouble. The background at Yale, of course, was just terrific, better than at any other elementary school in the city, I'm sure. At Rayen there was lots of extracurricular activity—baseball, basketball, track. I was vice president of the senior class.

Swent: This was at Rayen?

Campbell: At Rayen, yes. And I was on the honor roll when I graduated. Amazingly four of the top ten graduates from Rayen were Yale School graduates, so that shows how good our training was.

Chemistry was one of my favorite subjects, chemistry and mathematics. In chemistry I earned twenty-two cents an hour correcting notebooks. [laughs] Which was a great accomplishment then.

Swent: Helping the teacher?

Campbell: Yes, helping the teacher.

I started learning to drive about this time. Quite a number of times I note in my diary that I took people to football games and baseball games and things of that sort.

Seems as though I should have more to say about those four years.

Swent: Have you kept in touch with any of those friends from Yale School or from high school?

Campbell: From Quinibeck I still have one friend, Hope Graham Greenman. She visited me a couple of years ago. She lives in the East. I have one friend still from Yale and Rayen, but I didn't hear from her this past Christmas. Maybe she's gone.

Swent: You must have formed awfully close friendships at that small school.

Campbell: Oh yes!

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Campbell: I graduated from high school either first or second in the class, I'm not sure which.

During the last year at Rayen I was very active in all kinds of things. I was on the Rayen Record editorial board, writing articles and taking an active part in that publication. I was vice president of the class, I think I mentioned that before, and in all kinds of sports.

II CATHERINE'S HIGHER EDUCATION

Oberlin College, 1923-1927

Campbell: Time was rolling around to decide about college. My father wanted me to go east, but I wasn't that keen about it, and I was scared of taking college entrance exams, which was foolish. But anyway, we decided on Oberlin, and I think that was a very good decision. It was a topnotch college, and I really got a good education there.

My roommate at Oberlin was Constance Jaeger Ver Nooy. We roomed together for four years. Roommates generally don't stay together that long. [laughs] I'm still in touch with her.

I thought at first my major was going to be physical education because my father was very much involved, of course, in physical education with all his activities in the schools. But I had a physical exam before I went to college, and the doctor said there was a heart murmur that he didn't like the sound of, and he would suggest that I not take physical education as a major. I still wanted to, my freshman year at college, but my sophomore year I took geology and I was hooked.

My professor was George D. Hubbard--a very interesting and dedicated gentleman with a white Vandyke beard. Even though I only got a B in my first year's course, I decided I would go on with a geology major.

One of the good things about the Oberlin geology major was that they had summer camps that Dr. Hubbard led. So right after my sophomore year, when I had had only one year of geology, I went off to Narrows, Virginia, and had my first experience in the field. We lived in tents, and had a cook. There were about six or eight of us in camp; maybe three from Oberlin, and a man (Tom Hendricks) from Arkansas, and a woman (Adela Pond) from one of the eastern colleges.

Campbell: We really started at the beginning. First we made our base maps. We carried our rods, and transits, alidades, and compasses, and laid out a base line to start with, measured the base line, and then put up flags and worked out from there with rods and transits. And in my diary I said, "This was the real stuff," really fundamental, [laughs] how to start to work on a geologic map; first you have to do the topography and then you go on to the geology.

I'll never forget how we would hike along the railroad tracks and along the rivers and the streams to see the different formations and collect rocks as we went along. We would get a sequence of shale and sandstone and conglomerate and then we would get another sequence. Then suddenly it dawned on us that we were seeing the same sequence twice and that there had been a great fold--the rocks had folded back on themselves. One sequence was upside down and one was right side up. It just came as a great flash of light [laughs] when we realized what we were seeing. That summer camp was a very good one!

The next term at Oberlin--that would be my junior year--Francis Pettijohn was added to the staff. He is now one of the great geologists of our time. He had just got his master's degree from the University of Minnesota, and this was his first job. He was a tall, thin, gangly young man, and seemed scared out of his wits--very, very shy. He taught me practically every undergraduate course in geology. He said it was terribly difficult keeping ahead of me. He had to teach paleontology, and mineralogy, petrology, etc. George Hubbard, however, took the big elementary course in geology, and Francis took all rest.

I remember in our dormitories we often had teas and receptions for friends, and I invited Francis Pettijohn to come to a tea party. I told my roommate to watch for him because he was sure to do something odd. He was sure to trip over his own feet, trip over something, or spill his tea. He was so awkward. [laughs] And, sure enough, I motioned to her when he came up the front steps (she didn't know who he was) and he fell right on his face. He tripped over a rug as he came into the front hall. I thought Connie and I would die laughing!

Swent: [laughter]

Campbell: Well anyway, he married a nice girl from Oberlin, Dorothy Bracken, and they have lived happily ever after. He got the Penrose Medal from the Geological Society of America, and is one of the foremost geologists of my generation. He didn't stay at Oberlin but a couple of years, I think, long enough to get married and get his career off the ground. He has been at Johns Hopkins for many years and is retired now.

Summer Study in Colorado

Campbell: The next summer, of course I wanted to get more summer field experience and pile up credits also, because that was worthwhile. So I got in touch with A. K. Lobeck, a professor of physiography at the University of Wisconsin. He was running a short course, mostly for teachers, at the close of school in June. I thought I could go on his trip and then go to a University of Colorado course in the front range of the Rockies. This would work out well for the whole summer.

The Lobeck course started out with the front range of the Rockies. He was tremendous--a very famous professor. He was able to draw with both hands at the same time on the blackboard, doing perfectly marvelous sketches of the physiography of the area, glaciers and all kinds of physiographic features.

I met a very nice friend on that trip, Helen Focke, who was a friend for many years. She was head librarian at the Case University Geology Library in Cleveland.

An Oberlin friend, Charlotte Webster, who was one of my best friends, went with me to Science Lodge, which was the summer school run by the University of Colorado in the front range of the Rockies. It was run by Dean McCourt of Washington University in St. Louis, and Russell Gibson from Harvard. We studied all summer long, climbing and mapping in the Rockies. It was a very worthwhile course. We had lectures and we took exams. It was a really rough, well-run school. By rough, I mean hard academically. [laughs]

After that Charlotte Webster and I decided, since we were in the West, that we wanted to see as much as we could on our way home, so we hitchhiked. The two of us hitchhiked many miles. We went up to South Dakota and went to the Homestake gold mine. They let us go down into the mine, two women! And we went to the Etta Mine and went in little buckets down into the mine.

Swent: What were they mining, do you remember?

Campbell: That's a pegmatite mine.

Swent: In the Black Hills?

Campbell: I think it was in the Black Hills. It was not too far from the Homestake. But, being in Lead was wild. We couldn't find a place to stay. The only room we could find was upstairs over a bar. We were kept awake all night long by the wild miners carousing down below.

Swent: When was this?

Campbell: This was 1926, after my junior year. That was a long long summer, and we covered a lot of country.

My senior year, I was taking mostly geology. I still needed some credits to get a master's degree at the time I got my bachelor's. So I went on another Oberlin trip. The second Oberlin trip run by Dr. Hubbard was to Vermont. I worked pretty much by myself on that trip because his regular course involved again doing a topographic map and getting people to understand how one was made. I had done that, and I didn't need to do it again, so he gave me a problem of seeing if I could find out if there was any evidence of glaciation in the mountains. I did find some, and I wrote a thesis on traces of moraines of hanging glaciers. Nothing major in that area, but I did enough to make a good thesis, and I got my master's and bachelor's at the same time.

Then came graduation, and I made Phi Beta Kappa. The next thing was finding a job.

Swent: Was there any sense, when you were doing all this, of being particularly emancipated to be doing things like hitchhiking and sleeping over bars [laughs]—studying science, and all that sort of thing?

Campbell: I guess the hitchhiking—I think mother was rather upset. [laughs] Father took it in his stride, he thought it was great.

Swent: It wasn't exactly usual, though.

Campbell: No, it wasn't usual. The people that picked us up all over the country as we were hitchhiking were always facinated because here we were in knickers, and we had red wool socks with high boots, and we had our geologic hammers, of course, always in our hands [laughs], and a pack sack on our backs.

Swent: You were not exactly dressed like the typical flapper of the era.

Campbell: No, not the flapper type at all. They were always wondering, "What are you carrying hammers for, protection?" and we would explain what we were and what we were doing, and they were all very much interested, and they would go out of their way to take us where we were going. We got along just fine. Of course, there wasn't much hitchhiking in that time, and especially two girls. So we got along very well.

Swent: There were not a lot of women even taking geology at that time, were there?

Campbell: No, no. Oberlin, of course, was emancipated, first college in the country to have women. So this college summer course was a good one for people from other colleges to come to because it wasn't restricted to Oberlin people at all. It was a way of telling others about Oberlin and about the opportunities there.

More About Eliza Robbins Chase

Swent: Was your mother involved in the suffragist movement at all?

Campbell: I don't think so. She was a strong suffragette, but she didn't march or do anything like that.

Swent: Were you particularly aware of it?

Campbell: No. No, I wasn't particularly aware of it.

Mother was always very active. I probably should have brought this in a little earlier, but she was on the Y.W.C.A. board, and she was on of the Camp Fire Girls board, she was president of the Youngstown Garden Club, and she worked a lot at the Booker T. Washington Settlement teaching children. She was also active in the church. I can still see her on Christmas Eve programs at church. When telling a story, and she would always sit on a low chair and the children would sit all around her on the floor, and she would start, "Once upon a time..." All their eyes would focus on her, and they would be absolutely entranced until she had finished. She was a marvelous story-teller.

Swent: You had gotten just up to your graduation. What would be the expectation then, that you would teach?

Campbell: The expectation was that I would teach. Dr. Lobeck, whom I mentioned before, asked me if I would like a teaching assistantship at the University of Wisconsin to go on for my Ph.D. So, that Christmas vacation, I went to Madison where they were having Geological Society of America [GSA] meetings that year. I visited him and talked to him about this possibility. I was terribly excited about going to my first GSA meeting. This was Christmas '26. And I met people like Leith and Chamberlin, people whose names I had known but never expected to meet. I was just really on top of the world, I thought it was terribly exciting.

Swent: It sounds as if your family were quite affluent, if you could be doing all of these things.

Campbell: Oh, they were not, they were not affluent.

Swent: But you didn't have to work in the summer.

Campbell: No, no.

An Interlude--Teaching at Mt. Holyoke College, 1927-1929

Campbell: Anyway, the time had come that I needed a job because I would graduate and have my master's degree. So I wrote around to various and sundry colleges that Dr. Hubbard had recommended.

Swent: You didn't want to go Madison?

Campbell: As an alternative, I thought I would really rather teach full time rather than be working half time and going to school half time and have the process stretch out so long.

I got an offer from Mt. Holyoke College, which sounded very nice indeed. And, of course, my father was delighted about Mt. Holyoke because it was close to Amherst, and was the New England area that he knew. He had wanted me to go east anyway.

Swent: Did you know anyone there?

Campbell: No.

They sent me money for a trip to come back and have an interview. So I had an interview with Miss Mignon Talbot who was the head of the department, a little bit of a person. Her sister, Miss Ella, was in philosophy, and Miss Mignon was in geology. They were always known as the Talbi [laughs]--always together walking around campus. Miss Mignon was a perfectly darling person. She had her Ph.D. from Yale in paleontology, one of the early women in the field. I found Mt. Holyoke to be a perfectly marvelous place, and I decided to go there.

That summer was the Vermont field camp, and then I went right on to Mt. Holyoke in the fall. The young faculty members lived in the student dormitories, and had our meals there. We were assigned a table where we were supposed to sit for dinner. We had a senior student opposite us who was supposed to carry on a conversation. This bothered me terribly, but anyway--

Swent: Why did it bother you?

Campbell: I wasn't very good at conversing with the students. [laughs] It was very difficult for me.

Swent: You weren't much older than the students.

Campbell: No, I was about the same age, of course. But the other faculty members I grew very fond of. My next door neighbor, Marian Hayes, was in fine arts. She and I hit it off and spent a great deal of time together.

Another one who really had an effect on my life was Sylvia Meadows. She was secretary or assistant to the dean at Mt. Holyoke, and lived in Waban, Massachusetts—a suburb of Boston. I went to visit her and her family there on various occasions. We were very close friends and she will come into this story later.

I was teaching mineralogy and I'm not exactly sure what else. I can't seem to remember, and it's not clear in my diary. I think I was running the lab for Miss Mignon in the general course and teaching a couple of courses of my own. Of course I was absolutely scared to death and just shaking all during my first months of teaching. But Mt. Holyoke was a wonderful place to teach geology because the area is so interesting.

One of my first field trips was to a gravel pit, an old lake bed, and it had wonderful varves, layers of sand and clay and sand and clay, each varve representing a year's time. This was great fun to study because we could see whether summer way back there, thousands of years ago, was a warm summer or a cool summer. This was one of the ways, like tree rings, of telling what the weather was like during glacial times.

The Scandinavian geologists where there are lots of varves worked out a pattern so that, since the weather was similar in the whole area, and the lakes were of different ages, they could find patterns that would match from one pit to another. They could carry on their dating backwards or forwards by counting older and younger varves.

The students were extremely interested in this, and we would make measurements and talk about how many thousands of years ago all this had happened.

Of course, the Connecticut Valley is famous for its red Triassic sandstone, and its dinosaur footprints. That was another wonderful field trip to see the dinosaur footprints.

Miss Talbot described a new species of dinosaur, from the Connecticut Valley: *Pedocosaurus Holyokensis* Talbot, it was called.

Swent: Oh, that's wonderful.

Campbell: And I hope that's spelled right! [laughter]

Campbell: Anyway, it was a little dinosaur, just as she was a little lady, and it had tiny footprints. Believe it or not, we had a dinner party one time with the geology faculty of the four colleges: Amherst, Smith, Mt. Holyoke, and Massachusetts State. The place cards were red shale with dinosaur footprints on them. Imagine!

In this day and age that would be just horrifying to do! But there were so many of them. We just chipped them out and put names in white paint. I still have mine that says "Miss Chase."

Swent: I was thinking, when you were talking about going to Yellowstone collecting wild flowers, you wouldn't want to do that today either, but it was all right then.

Campbell: Yes, times have changed.

Swent: Yes. So you had your own little fossil footprints on your place card.

Campbell: Yes, on the place card. It was easy to split that shale, and it made nice little rectangular place cards.

##

Campbell: As well as the sandstone and shale and arkose that we have in the Triassic beds of the Connecticut Valley, we also have basalts. There's one basalt flow that is especially interesting. It was one of our field trips from Mt. Holyoke. It is called Titan's Pier and Piazza. This is an outcrop of columnar basalt that has been planed off by the river (it's right down by the Connecticut River) and the basalt columns are beautifully etched out by the river so that it makes a very interesting surface with all the six-sided pillars of basalt forming Titan's Piazza. The story goes that Reverend Edward Hitchcock, president of Amherst College in the mid-1800s, called a convocation to name this outcrop officially "Titan's Piazza." He was fearful that someone might name it for the devil, as had already been done at the Devil's Post Pile in California. He wanted to make sure that columnar jointing was not always associated with Satan.

Then of course there are the mountains themselves--Mt. Tom, and Mt. Holyoke--also held up by the basalt flow which is harder than the underlying sedimentary rocks. We had lots of trips and climbs up into these mountains.

I tried to make the classes general and give the students the type of information that they could carry with them through the rest of their lives. I took them out on lots of drives. My father gave me a car, his old Buick, that he was turning in for a new car. I don't know whether he sold it to me or whether I was

Campbell: given it. Probably I was given it. Anyway it was a touring car, and I took the girls out (I never had more than three or four students in the class), and we would talk about what we were seeing as we drove by. I wanted them to get some feel for the physiography as well as the rocks that they could see from a car. I felt as though that was the kind of thing I should emphasize, since they would not be taking graduate work in geology. Only one of them did go on for a master's degree.

Another thing I did was to ask Dr. Hubbard if he would consider lending me some of his surveying equipment, and he said he would be delighted. So we made a little map of part of the campus. We laid out a base line, and we used the transit and the allidade and compasses and levels, and we did a topographic map. The girls got a tremendous kick out of it. I felt it was good for them to understand how a topographic map was made.

One of my students went on in geology and worked with the U.S. Geological Survey and the Bureau of Mines. She was in San Francisco a couple of years ago when she was made an Honorary Member of the Association of Engineering Geologists--a great honor. I was very proud of Alice Allen!

Swent: This is the gratification of teaching, isn't it?

Campbell: Yes, real gratification.

Swent: You mentioned the Swedish work with varves. What means were there of communicating with other geological work? How were you aware of other things going on in the field? Did you go to meetings?

Campbell: Yes, I went to GSA meetings.

Swent: Did you subscribe to publications?

Campbell: Yes.

Swent: What were the ways you kept in touch at that time?

Campbell: At that time it was mostly through meetings. I went to GSA meetings, I went to the one in Madison, as I said. I went every year for several years. I went to one in Cleveland and one in New York. Also we had New England Intercollegiate Society meetings every fall.

Swent: When did you join GSA? As an undergraduate could you join or did you have to wait until you graduated?

Campbell: This I can't remember. They have student memberships now but I don't think I belonged in those days. But I was perfectly aware

Campbell: of the meetings, and I went to them. In those days meetings were at Christmas time, which was very awkward. Now it's changed.

Swent: What publications did you take?

Campbell: I don't know. There would have been publications in the library, but I can't remember publications that I subscribed to myself.

Swent: What were some of the excitements in geology at that time? Were they still arguing about vulcanism?

Campbell: No, that was past. They were talking later, when I was in graduate school, about the Wegenerian hypothesis of moving continents, but it was laughed down. Isostasy and geosynclines and geoanticlines were some of the major concepts.

Swent: All right. Your first year you were probably just concerned with keeping your head above water with your teaching.

Campbell: Oh, I definitely was. It was hard. I don't think I did too good a job, although they seemed to think I did. Miss Talbot was particularly pleased, because I had such a wide range of knowledge about natural history. I knew more than just geology. I could talk about birds and trees and butterflies and flowers as well as rocks. She thought that was great.

Summer Field Trip in Europe with Kirtley Mather, 1928

Campbell: One of the visitors to Mt. Holyoke was Dr. Kirtley Mather from Harvard. I met him and asked him to speak to one of my classes, which he was glad to do. Then I asked him for dinner later at the dormitory, and we had a walk in the evening. He told me that he was planning a trip the next summer to Europe, he and his wife, a geology trip with Harvard credit, and how would I like to go. Of course I was enthusiastic. This just added one more summer field trip to my list. Charlotte Webster decided she would go too. She was the one who was with me on the Colorado trip.

Swent: She was your hitchhiking friend?

Campbell: Yes, my hitchhiking friend.

Swent: What was she doing by now?

Campbell: By now she was a teaching assistant at Bryn Mawr. Helen Bicknell, who was one of my students at Mt. Holyoke decided to go too. I can't remember how many of us there were, maybe eight or ten. Another woman from Radcliffe and about three or four men

Campbell: from Harvard. One was on the football team, and this was a way of getting college credits for him, because he was not doing too well academically.

Anyway it turned out to be a really fabulous trip. We went first to France and studied the Paris Basin.

Swent: You went on a ship, of course.

Campbell: Yes, we went on a ship. My mother and godmother, Lura Liggett, saw me off in New York. I remember cousin Lura gave me a twenty-dollar gold piece to put in my pocket; she said, "Save that in case you're in trouble." I still have it. [laughs]

We studied first the Paris Basin. Then we went to Switzerland and were in Geneva for awhile. Then we had about a month of climbing in the Alps with Leon Collet, the head of the geology department at the University of Geneva. He had a couple of his graduate students with him too. So we climbed, and we studied the rocks, and then we came rushing down the mountain. We would climb slowly up, and then we would always have a "rapid descent" as he called it--we zoomed down the mountains, using our Alpine stocks as brakes. [laughs] A glaciologist by the name of Odell was also with us.

The culmination of our month in the Alps was a climb of the Matterhorn. There weren't too many of us who made it, but I did. On our rope first came the guide, and then came me, and then came Marland Billings who was then a young professor at Harvard. Marland pushed me up from behind and the guide pulled me up from above. [laughs] But anyway we made it to the top of the Matterhorn and it was a very exciting trip! Marland is now a professor emeritus of Harvard. He was awarded the Penrose Medal--the highest award given by GSA--in 1987. He mentioned the Matterhorn climb in his acceptance speech.

Swent: Oh, it was quite an experience!

Campbell: Yes, it was. We went half way up the mountain one afternoon and stayed in a little chalet where we slept awhile and had a cup of tea. Then we were up well before dawn and made the climb to the top of the mountain. We came down in one day, all the way down to Zermatt. That was the first day of August. It's their national holiday, like the Fourth of July here. So we had a great celebration that night in Zermatt.

Of course that trip brought me in close touch with the Mathers since I'd been with them all summer. Dr. Mather said, "What about coming to Harvard for your Ph.D. there?" He thought he could get me a scholarship or a fellowship. So I decided that was the thing to do.

Campbell: I went back to Mt. Holyoke and carried through my second year. Miss Mignon was very upset about my leaving, but she said, "Well, you'll come back I hope. I expect you to come back." I said I certainly expected to come back. That turned out to be the end of my Mt. Holyoke experience, which was a very satisfactory one. I loved it there and made very good friends.

One of them was Marian Hayes, as I mentioned before, and she also decided at this time that she wanted to go on for her Ph.D. So she also came to Harvard, and we roomed together in Cambridge. That arrangement worked out very nicely.

Swent: Would you mind saying how much you were paid at Mt. Holyoke?

Campbell: Oh no. The first year I was paid \$1,200 and the second year I was paid \$1,500 a year, but I was given room and board in a dormitory. I was really rolling in wealth at \$1,500 a year--

Swent: Yes. At that time that was ample.

Campbell: And not having to pay room and board was great.

I did note once in my diary that I was wondering about graduate school, and how much it would cost. This was later, though, when I was at Harvard. My father had sent me \$500 for the next semester.

Swent: That paid for Harvard?

Campbell: Well, of course I had a fellowship which was \$500 or \$600. But it certainly is different now. [laughs]

Swent: Yes, indeed it is. How much was gasoline, do you remember?

Campbell: No; not very much.

Graduate Study at Radcliffe and Harvard, 1929-1931

Campbell: Then I went to Harvard and Marian Hayes was my roommate. She was in fine arts and I was in geology. Dr. Mather did work out a scholarship for me, and I registered at Radcliffe. I seldom went to Radcliffe except to register each semester.

Swent: Where did you live?

Campbell: We lived in a perfectly delightful house on Concord Avenue. It was the house of the widow of a Harvard professor, a Mrs. King, who rented out rooms to college students. We had rooms opposite each other on the third floor. The bathroom was on the second floor. There were other people on the second floor, other roomers, and it wasn't too easy getting into the bathroom. I remember taking my German books and studying German sitting on the stairs waiting my turn to get into the bathroom. [laughs]

Swent: Had you studied foreign languages before?

Campbell: I'd had lots of French. I had a minor in French at Oberlin. I had no problem about French, but I did have a problem with German. I practically taught myself. I took one summer course somewhere along the line.

Swent: German was required for sciences?

Campbell: German and French, I had to pass both languages. I passed my French; the professor who gave the test said I knew French better than he did. But the German was a problem for me. I took it from Dr. Mather and I passed it all right.

Swent: Had you studied Latin?

Campbell: Yes, I studied Latin in high school, two years of Latin. And that, I think, was helpful.

Of course, the problem with Harvard was that I was the only woman in the courses. If any Harvard student objected to my being in the class, I could have been evicted immediately, and the professor would have had to give that lecture a second time to me by myself. Fortunately, I never did get evicted. I sat quietly in the classes with the men.

Swent: Dr. Mather obviously welcomed you, though.

Campbell: Oh yes. They all did, and there was no trouble at all except during exams. I could never sit in a room with the young men taking their exams. I'd have been a distraction.

Swent: [laughs]

Campbell: It was awkward for the professors because they had to have another set of questions for me. Very often they would write the questions on the blackboard and, of course, they would have to have a set for me, because I was in another room. But, even so, it wasn't too bad because the professors were all, as I remember, given \$500 extra for having a Radcliffe student in the class.

Swent: So you were technically enrolled in Radcliffe.

Campbell: I was technically enrolled in Radcliffe, yes.

The only really bad time that I had was in Reginald Daly's course--the only large lecture course that I took. There, as soon as I got to the room for the final exam (I went to the same room where I had been having the lectures, and I expected to have the exam there) I was told I had to go to Radcliffe to one of the classrooms there. Of course, I didn't know my way around Radcliffe. I didn't know the name of this building, and I didn't know where the room was. I was frantic running across the [Harvard] Yard and getting over to Radcliffe, and then finding my way around, then finding the proctor and having him get my name and find my exam paper. But somehow or other I managed. So I took the exam. But it was a dreadful experience.

In all other classes I was just put into the professor's office and given my exam.

Swent: How did you react to this? Did this annoy you?

Campbell: No, no. I just knew this was the way it was.

Swent: It didn't make you feel inferior or anything?

Campbell: No, I was careful, and I had lots of dates. The men liked me, as far as I could tell. As I was reading in my diary, I was suprised at the number of names that were there. I had lots of dates with a man by the name of Lincoln Thiesmeyer. I don't know whatever happened to him. Another one that I admired was John K. Gustafson; he later became the president of Homestake, and you probably know his wife Betty. And his roommate, Norman Hinche, who was later a professor at Washington University in St. Louis. They were all very good friends.

Swent: What did you do for dates? Where did you go?

Campbell: We'd go out for dinner, sometimes. Although, mostly people were too poor.

Swent: That's another thing I was going to ask. We're getting up to the Depression now, aren't we?

Campbell: Yes, I guess we are. It didn't seem to bother me. [laughs] I had a car, and we would go for rides in the car. Mrs. King had a nice little parlor downstairs where we would sit and talk. Then she had a nice garden down in the back of the house, and we would go down there. She had a swing there, and we would sit in the swing and talk.

Lincoln Thiesmeyer liked to sing, and we did a lot of singing together. That was really fun. My diary says that on

Campbell: one occasion I didn't get home until 1:30 in the morning--out with Lincoln, singing.

Swent: Was smoking something that women were doing?

Campbell: Smoking was something that women were doing, and I was smoking a lot.

Swent: Drinking?

Campbell: I don't remember drinking at all.

Swent: That was prohibition. Tell me about your professors.

Campbell: I had marvelous, marvelous professors. Kirk Bryan was in physiography. Esper Larsen was in petrography, and John Gustafson was the lab assistant. I worked harder on that course than any course I ever took. When I got my "A" at the end of the semester I put in my diary with exclamation points "happier to get this grade than any that I ever remember."

Then I had the course with Reginald Daly, a very famous geologist. Joseph Cushman was my professor in micropaleontology. Charles Palache, the mineralogist, was another wonderful person. Many of these professors invited the graduate students to their houses for dinner or for tea. Sunday afternoon the Bryans always had open house for tea. Percy Raymond was the paleontologist. Percy Raymond smoked cigars but, of course, he couldn't smoke in the building. Morning and afternoon there were coffee breaks. Then he would go outside and smoke his cigar, and after fifteen minutes he would put his cigar on a little ledge on the side of the building. He would leave it there [laughs] ready to be lit up during his next break.

The department had a Geology Club run by the students. I was very unsure about whether I should go, being the only woman. I did go, but as I look back, I probably shouldn't have.

##

Campbell: The first time that Ian Campbell is mentioned in my diary is in connection with a Geology Club meeting. I note that I went to Geology Club to hear a talk by Ian Campbell and Horace Fraser, and I also noted, "rather deadly." [laughs] That was my first experience with Ian.

Now we have to go back to Mt. Holyoke and Sylvia Meadows, who was one of my very good friends there. Sylvia's family lived in the town of Waban, outside of Boston, as I think I mentioned earlier. Her father was a wool man, and he went west every year to buy wool from the sheep herders in the Dakotas. His favorite

Campbell: sheep man was Dugald Campbell. They became fast friends--Mr. Meadows and Mr. Campbell. Mr. Campbell was a great reader and so was Mr. Meadows. Neither had had formal education, but they were self-made, self-educated. Whenever Mr. Meadows came west to buy his wool, he always stayed with the Campbells, and he got to know the two Campbell children--Ian and Flora. He kept up with them during all the years after he had retired from the wool business and after the Campbells had moved from Dakota. When Ian went to Harvard for graduate work, he got in touch with the Meadows.

So, when I was at Mt. Holyoke, Sylvia Meadows said that she knew somebody in geology who was at Harvard, and she hoped some day that she could introduce us. Well, now I was at Harvard and she was visiting her family. (I think maybe she had left Mt. Holyoke by then, I'm not sure.) Anyway, she invited me and she invited Ian to come to their house for dinner.

Meeting Ian Campbell

Swent: You had heard this "deadly" talk before?

Campbell: Oh yes. I was surprised to see that "deadly talk" business in my diary. I hadn't remembered it. On the 27th of April, 1930, I had my first date with Ian. We went to the Meadows' for dinner, and I was greatly impressed. Of course, I knew who he was because I had seen him around the department. I was never in a class with him, but I knew he was one of the graduate students.

Swent: Oh, he was also a graduate student?

Campbell: Yes, he was also a student. We had a delicious dinner at the Meadows', and after dinner Ian rolled up his sleeves and said he was going to do the dishes. I thought, "Gee," [laughs] "that's pretty impressive!" Then he asked me out again on the twenty-ninth, then on consecutive weekends, pretty often after that.

We went out on trips. He had a car, too, and we would go to Walden Pond, and to some of the inns round about, and have dinner. We went to Pops concerts, Hartwell Farms. We went canoeing. In one of our early dates, we discovered that we both were Unitarians, which was quite a surprise because there are not too many Unitarians about. So one of our first dates was to King's Chapel in Boston. We discovered that his mother was president of the Women's Alliance in Eugene, Oregon, and my mother was president of the Women's Alliance in Youngstown, Ohio. So this pleased both families. So things just progressed.

Campbell: By the time summer came, we were pretty serious. Ian wanted me to come out and meet his family. He was helping his father, who had a cherry orchard in Eugene.

Swent: He'd left the sheep ranch?

Campbell: He left the sheep ranch when Ian was nine years old, but more about this later.

Swent: So you went out there to visit?

Campbell: So I went out to visit the family. I met his sister, Flora, and his father and mother and aunt, and we all seemed to get along well together. We decided we would get married.

Ian had a job that summer in Tonopah working with Tom Nolan, with the U.S. Geological Survey [USGS]. I visited him in Tonopah, and that was fun. I had relatives, some of the Robbins family, Catherine Robbins in fact, and her sister, who were living in Santa Barbara at that time. They'd left Wethersfield and had moved to Santa Barbara.

Swent: How were you traveling?

Campbell: I was traveling by train, [laughs] not hitchhiking.

Swent: I thought, perhaps, you had driven, but that's a long, long drive.

Campbell: No, that's a long drive. I thought of driving, but father said he didn't think it was wise.

Swent: You were much too wise to hitchhike, now.

Campbell: So, we decided we would get married in the fall when he finished at Tonopah.

Swent: What was Tonopah like at that time?

Campbell: Tonopah was just nothing much of anything.

I went there from Santa Barbara. The travel agent in Santa Barbara was very unsure about how I was going to get to Tonopah. I got off the train in the middle of the night at some small place, I think it was Daggett. The station master had to flag the train with a red lantern. I got on the train and went to Las Vegas. At Las Vegas there was just one hotel close to the railroad station, and I spent the night in that hotel. Then the next day I rode in a stage, it was a motor stage, it wasn't a horse-drawn stage--

Swent: They still called it a stage?



Catherine C. Campbell, 1955.

Campbell: They called it a stage. Of course, I was the only passenger. The driver carried mail. As we went out of Las Vegas, we passed a swimming pool and he said, "Would you like a swim?" [laughs] I said I didn't have a swimming suit. He said, "You can rent one." So I said, "Yes, it would be wonderful," because it was hot as hades. So we stopped, had a swim in the swimming pool, then we got back onto the stage and went on to Tonopah. [laughs]

Swent: [laughs]

Campbell: I stayed in a funny hotel, and Ian appeared about dinner time. We had dinner together and then we went to talk to the Nolans; both Tom and his wife, Pete, were there. We had a delightful time. Then the next day Tom gave Ian the day in camp so he didn't have to go out in the field. He and I worked on maps all day long in Tonopah. Then that evening, I left Tonopah and went on home.

We were married in Youngstown on the sixteenth of September, 1930. Then we drove on back to Cambridge to start our year there.

Swent: None of his family could come to the wedding?

Campbell: No, none of his family came. Charlotte Webster and Connie Jaeger came, and Horace Fraser, who was Ian's roommate at Harvard, and, of course, my mother and father, and their best friends, the minister and his wife. We had lunch after the ceremony, and then we all took off.

Swent: You went off to Cambridge? We need a little violin music as we stop here.

Campbell: [laughs]

##

III IAN CAMPBELL'S BACKGROUND

Forebears

[Interview 2: March 14, 1988] ##

Swent: You wanted to fill in a little bit more about Ian's background, and I think that's a good idea.

Campbell: Yes, I think before we proceed through the next forty-eight years of married life, it would be well to have some more background in depth for Ian, because I have given a great deal of background for myself.

His father, as I said, was Dugald Campbell. The Campbells had lived in Campbeltown, Scotland, for many generations. It was a big family, as they all were in those days. His father had a farm, and ran sheep and cattle in Campbeltown. He was also the shoemaker of the town. Ian's mother was Agnes Gilkison, and she, again, was a member of a large family. They too were long-time residents of Campbeltown. The Gilkisons were, perhaps, a notch above the Campbells socially. They lived in a beautiful stone house right on the loch. Agnes was the youngest of the family, and was quite a dare-devil. She used to take their rowboat out on the loch and scare her mother half to death, because she was out there when waves were dashing high.

The Gilkisons sat in front of the Campbells in the church, and I think Dugald had his eye on Agnes for a good many years as they were growing up in Campbeltown.

Swent: Do you know when Dugald and Agnes were born? What were their years of birth? It would be, what, mid-eighteen hundreds somewhere?

Campbell: Yes, Dugald was born in 1855 and Agnes in 1868.

Campbell: A bank in Glasgow failed about 1878, and Dugald's father was badly hurt financially. He pretty much shoved his children out. Hugh was the first one to go; he was an older brother of Dugald's. He went to Virginia where there were other Scots. And then he went from Virginia to Dakota Territory.

The Dakota Years

Campbell: Hugh sent for Dugald, and he came, and then James and then Alexander and then their sister Flora, and then their father Alexander came. So a lot of Campbells took out homesteads.

Swent: And the homesteads were 160 acres?

Campbell: One hundred sixty acres, it was a huge ranch. They ran sheep because that's what they knew best after living in Campbeltown, Scotland. Dugald got breeding stock from Scotland; he wanted the very best quality. And he brought sheepdogs from Scotland, too.

He started out with just a sod hut that he built himself. Of course, he knew he couldn't get married until he had built a proper house, so, during the first years of his homesteading, he got himself established and built a proper house. Then he went back to Campbeltown and proposed to Agnes Gilkison.

She had been teaching in Campbeltown in the elementary school, but she thought Dakota Territory sounded like a really terrific adventure, and she was all for it. So she came out to the house on the prairies, which was just nothing compared to their lovely house in Campbeltown.

After a year, Ian was born, and she felt that she needed help. So she wrote back to Scotland for her sister Janet to come—an older sister.

I think I'll go back a little bit here. Janet had been for some years living with an older sister, Mary Ann, who had married a man by the name of Dan Curry. Dan was high up in the British India Company and became very wealthy. The Currys lived mostly in India and Janet was there to take care of their two daughters, bringing them up properly and taking them back and forth to England. The Currys had a house in London as well as a house in Campbeltown.

When Ian was about eight, Aunt Janet took him back to England to visit Mary Ann and Dan Curry in London. Aunt Janet was really quite remarkable it seems to me. She allowed Ian to

Campbell: go off by himself on the London subways. He spent hours and hours in the British Museum and got around all by himself in London--this little boy.

The Currys had a Rolls Royce, and the first time Ian was ever behind the wheel of a car was sitting on the lap of the chauffeur, driving the Rolls Royce. Some difference from driving a horse and buggy on the prairies [laughs] of Dakota Territory. Of course, Aunt Janet had him properly dressed in London. The thing that he hated the most was the hat she made him wear. The Currys lived in a three-story house that had a circular staircase that went all the way up. So Ian took his hat and went to the top of the third floor, and threw it all the way down to the bottom and smashed it all to pieces. [laughs]

Swent: What kind of hat was it?

Campbell: I think it was stiff straw, because it was a summer hat. I think it would break all to pieces. A boater, wasn't that what they were called?

Swent: A tremendous change for a little boy.

Campbell: Tremendous.

Swent: And he was alone, his sister didn't go?

Campbell: No. Just Aunt Janet and Ian.

Another anecdote about the prairies, while we're still there. Ian always said one of the proudest moments of his life was one day when he was in Sunday school, and one of his father's sheep herders came and said that his father needed him back on the ranch. One of the eastern wool buyers had just come, and they had to round up the sheep in a hurry. They needed Ian and his dog to help. This was a tremendous boost for Ian's morale in front of all the children in Sunday school.

Flora was a year and a half younger than Ian, and, of course, in their younger years, their mother taught them. She had been a teacher in Campbeltown and she taught them well. She knew what they should learn, and when they should learn it. And she did an excellent job of teaching the fundamentals of reading and writing and arithmetic. Both of them were very bright and learned very quickly.

About the time that Ian was ten, his father felt they must move from the prairie. He wanted to live in a place where the children could be properly educated.

Swent: Did the mother teach any other children, or just the two at home?

Campbell: Not to my knowledge. I think just the two at home.

The railroad finally came through, and they thought, of course, they would have the Campbell stop named Campbell, but it seems that there was another Campbell already in Dakota Territory. So they asked Dugald what he wanted to name the town, and he said that he would name it Kintyre for the Kintyre Peninsula on which Campbelltown is located. And Kintyre is still in existence today, and it still has a post office. A few years ago, Kintyre, North Dakota, was briefly in the limelight when Thomas Kleppe was made secretary of the interior, 1975-1977. Mr. Kleppe was born and raised in Kintyre. The house that Dugald built before he brought Agnes out is still standing and still occupied. They say that his was the first inside plumbing in the whole territory. And he also had solar heating with pipes on the roof so the water was heated by the sun.

Swent: Are there still Campbells there in that area?

Campbell: No, all the family has left. Most of them, I think, went to Oregon when Dugald moved. James went, and Alexander went, and their sister Flora went. The ranch was sold, although there still is a sign that says "Campbell Ranch." I know this because my niece, Janet, stopped there on the way home from Chicago just a few years ago. She had a very nice visit with the people who are living there.

The Eugene, Oregon, Years

Swent: Did they scout Oregon before they started out for it?

Campbell: Yes, Dugald traveled from Vancouver to San Diego, stopping at all the cities along the way. He chose to move to Eugene, Oregon, because of the university, and also because it seemed similar in climate to Scotland.

After the move, Dugald went to Oregon State University to decide what to grow. He took agricultural courses and decided that he would grow cherries and walnuts and prunes in his orchards, as well as peppermint in the fields.

Swent: He gave up the sheep, then.

Campbell: Oh yes, he gave up the sheep entirely.

So now Ian is in Eugene and in school there, and he goes through elementary and high school, always at the head of his class, young, small, with his sister Flora coming along right

Campbell: behind him. He went on to the university. The first year he was pledged at Sigma Chi, but, of course, freshman year they didn't join fraternities.

And then came World War I, and he was determined to enlist. He was fired with patriotism, apparently, even though he was just seventeen. At this age, he had to get his father's permission to go. He persuaded his father to sign all the papers. An Ambulance Corps was being formed at the university in Eugene, and this sounded like a good thing for him to join.

So he joined the Ambulance Corps in the 91st Division, and went to Camp Lewis. They had their basic training there; they trained with wooden guns because there were no real guns for them to practice with. I think I still have that wooden gun in our storage room here. [laughs]

They were sent almost immediately to France. He was there for the whole war, he was there when the armistice was signed. That was apparently a very moving experience for him because his eyes would always cloud over when he talked about it. The king of Belgium was there and spoke to them as the armistice was being signed, and expressed his gratitude to the American soldiers.

I'll jump ahead for a minute here. The government gave a bonus to World War I veterans sometime around 1937--'36 or '37. The bonus was based on a formula which took into account the age--the younger the age, the more they got, and the longer they were overseas, the more they got. And Ian had the largest bonus in Pasadena, [laughs] which was very nice for us at that point.

After the war he went right back into college, of course. Sigma Chi sounded like a childish thing; he never had anything further to do with fraternities, although Flora joined a sorority. He lived at home, and went right through--he was a Phi Beta Kappa in his junior year, which is pretty remarkable, and graduated in 1923. Flora also was a Phi Bete.

He helped with the cherries year after year in the summertime, hiring the pickers and driving the truck back and forth from the orchard to the cannery. For many years this was a regular summer chore in June.

The next year he went to Northwestern University to get a master's degree. In these college years he was famous all through the university for his motorcycle, his Harley-Davidson. The group at the university who had motorcycles was organized into a little club called "The Kindred of the Dust," which I think is a wonderful name. I'm sure it was Ian's idea. Of course, none of the roads were paved outside of the town, and they were always riding in a cloud of dust.

Swent: What did he major in?

Campbell: He started majoring in chemistry, but he had a course in geology. It's one of these quirks where he had an extra hour to fill and he took geology. It was taught by Edwin Hodge who was the head of the department then. And Ian loved it, so he changed his major in his junior year and went on in geology.

Swent: Why did he choose Northwestern?

Campbell: I suppose he had a scholarship, or something. I don't know any particular reason. He worked for the Wisconsin Geological Survey either the year before or the year after the Northwestern year.

Campbell: The particular friend that he made at Northwestern, Jack Stark, made a great impression on him. Jack will come in later in this story.

Then the time came for him to earn some money because he had to get a grubstake before he could go on. He knew he wanted teaching by this time, and he knew he had to have a Ph.D. Through another Oregon connection, Henry Howe asked him to come to Louisiana State University to teach there. This was a two-man department. Henry Howe was chairman, and he needed someone to teach mineralogy and petrology, because he was primarily a paleontologist and sedimentologist. So Ian had two years at Louisiana State University and made some good friends there and enjoyed it.

That was the time of the Scopes trial, and Ian almost gave up at Louisiana State because Louisiana Governor Huey Long was very much opposed to the idea of evolution. Ian said he couldn't teach in a place where they didn't believe in evolution.

Swent: We should explain the Scopes trial a bit. This was the famous trial in Tennessee, wasn't it?

Campbell: They called it the "Monkey trial."

Swent: Were they suing a teacher, or--

Campbell: I can't remember. I know Dr. Mather was called on by the lawyer to support John Scopes.

Swent: This is Dr. Kirtley Mather from Harvard. And wasn't Clarence Darrow one of the lawyers?

Campbell: Clarence Darrow was the lawyer, yes.

Swent: It was a notable case.

Campbell: Oh yes!

Swent: The issue was whether evolution was "true" or not.

Campbell: That's right. They were also trying to prove that evolutionists need not be atheists.

Swent: And it stirred up a lot of trouble, particularly with the geologists.

Campbell: Yes, and particularly in the south.

Swent: Yes.

Campbell: Because it was a religious problem and the Southern Baptists were strongly opposed to evolution.

Swent: And it's strangely alive even to this day.

Campbell: Amazingly so. It is, indeed.

Swent: So being in Louisiana at that time was difficult?

Campbell: Yes it was.

Swent: So he stayed in Louisiana for just--

Campbell: Two years. And then he went to Harvard. And then we met and I think we can take up our lives together now.

Swent: Why did he choose Harvard? What was the connection there?

Campbell: I don't really know. His brother-in-law was there in Harvard Medical School.

Swent: That would be Flora's husband?

Campbell: Flora's husband.

Swent: What was his name?

Campbell: George Houck. And there were other Oregon friends there; the Cutsforths, for example, psychologists, were at Harvard. Both he and his wife were Ph.D.s in psychology. Tom was blind. I remember George and Ian and Tom Cutsforth were all out on Cape Cod on one occasion, and their Ford's lighting system went berserk. Tom fixed it. It was dark, but Tom didn't need a light.

Swent: When did Ian get off the motorcycle?

Campbell: I think when he went to Harvard, because I never knew him to have a motorcycle, and I met him in 1929. I know he had a car then; he had a Ford.

Swent: But the motorcycle was quite a significant thing in his life.

Campbell: Oh, very significant, yes. He rode from Portland, Oregon, to Portland, Maine, on the motorcycle. And this, of course, was in the twenties. It was unbelievable, because there were just dirt roads most of the way. Harley-Davidson gave him a medal for this. He was very proud of that medal.

Swent: Even today that would be quite a feat. [laughs]

Campbell: He had George Houck on the seat in back of him for part of the trip.

Swent: So he was adventuresome, I would say.

Campbell: Oh, yes. I think that's enough background and I think we'll pick up in 1930 when we were married. Our first year at Harvard turned out to be quite a busy one.

IV THE YEARS TOGETHER, 1930-1978

The Harvard Years, 1930-1931

Campbell: I was taking a full course working toward my orals. Ian was teaching mineralogy, teaching Dr. Palache's mineralogy course while Dr. Palache was on leave, and running the lab. His main occupation, really, was writing his thesis. It was on Tonopah where he'd spent two or three summers with Tom Nolan working for the U.S. Geological Survey. Tom Nolan later became director of the Survey, so that was a good connection for Ian.

Swent: And you stopped and visited him--

Campbell: I stopped and visited him in Tonopah in 1930.

We had symphony tickets for the 1930-31 season. Ian was very fond of music. We had quite a number of friends among the graduate students, so we had some social life. But we mostly kept our noses to the grindstone.

In the spring, I was asked to teach at Wellesley College for a few months because Miss Lanear, who had been teaching the course, had to have an operation, and they needed somebody to carry through for her. I didn't want to do it at all. I was just up to my ears in work as it was. But Ian pushed me and Miss Lanear pushed me, and Dr. Gibson pushed me, so I did it. And I'm not proud of it, but I managed to teach three days a week--

Swent: That's amazing!

Campbell: --and still live through it. But I was very glad when Miss Lanear was able to come back, because there were three or four months that I was just pushed to the limit.

Swent: Was it a little unusual for a graduate student to be married?

Campbell: No, quite a few of them were married.

- Campbell: The eighth of May, 1931, I started my prelims. They were in three installments. The first was a written examination for two hours on dynamic and structural geology. Then, on the ninth of May, I had two hours on historical and stratigraphic geology. Then, on the fourteenth of May, I had two hours of orals. I wrote in my diary that I had a hilarious time at the orals. [laughs] So, that went off smoothly.
- Swent: Who did you do your orals before, do you remember?
- Campbell: Practically the whole faculty was there because my professors all wanted to see how I would do. Then Ian's professors were all interested in seeing who was this girl that Ian had married. [laughs] How is she going to handle herself on a preliminary exam? So all the economic geology people from Roach Building were there as well as everybody from the museum side of the Yard.
- Swent: From Roach?
- Campbell: Yes, that's the name of the building where the economic geology classes were held. It's no longer there.
- Swent: You and Ian were not in the same classes, or did you have any of the same professors?
- Campbell: We had some of the same professors, but he was in economic geology and hard-rock geology, and I was mainly in physiography and paleontology. Ian wanted me, of course, to help him as much as I could with his thesis which I did, editing and making suggestions. We worked together quite a bit on his thesis.
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- Swent: Were you a typist?
- Campbell: No. Well, I typed.
- Swent: You weren't typing his thesis?
- Campbell: Oh no, no! I wasn't that good. That was the Depression. And our next job was "just pie in the sky." We knew we had to get busy. So resumes went out, or letters went out--I don't think we called them resumes then--and nothing happened, and nothing happened, and April passed, and May came. Then suddenly we had three offers. It was very exciting! One was the School of Mines in Butte, Montana. And another was at Hamilton, New York, a small college in upstate New York. And the third one was Cal Tech [California Institute of Technology] in Pasadena, California.

Campbell: Ian's sister and her husband had just moved out to Los Angeles, both of them having finished their M.D.s at Harvard. That was an added reason for going to California. Ian, of course, liked the West Coast because of his connection with Eugene. I was all for Butte, Montana, thinking that would be an exciting wild-West kind of place [laughs] and the salary was higher, but not by much.

The last of April, 1931, we had a telephone call from Dr. Robert Millikan, president of Cal Tech. Dr. Millikan was coming to New York, and he asked if Ian could come down from Cambridge to see him and have an interview.

After this interview we decided we would go to Pasadena. So in June 1931 we packed up our goods and chattels and sent them by ship through the Panama Canal--to meet us in Pasadena when we arrived in the fall.

Swent: I'd like to backtrack just a little. You didn't say anything about where you were living in Cambridge.

Campbell: We got an apartment. My mother and I went back to Cambridge before we were married. We found a very attractive little apartment, just down the street from the museum--easy walking distance from our classes.

Swent: It wasn't hard to find a place?

Campbell: No, not particularly. We went in August, ahead of the fall influx of students. We bought some second-hand furniture and it was really a very attractive little place. It had a living room, bedroom, and a hallway that I used for a dining room, and a kitchen, and a bath.

Swent: Were you cooking three meals a day?

Campbell: I was cooking. It was really a rugged year.

Swent: It must have been. You didn't have TV dinners and a microwave either.

Campbell: No, no. I had a pressure cooker, and I did marvelous things in that pressure cooker. It's a wonder I wasn't blown to the sky with an explosion of all that pressure. [laughs]

Swent: You really had a lot to do then.

Campbell: Yes. But we both came through.

Swent: You both finished at the same time.

Campbell: No, I finished my prelims, Ian finished his finals. So he was ahead of me.

Swent: He was a year ahead of you, right?

Campbell: Yes.

Swent: So, you were doing things by mail from Pasadena?

Campbell: From then on, yes.

Swent: So your goods went through the canal, but you--

Campbell: We drove across the country. Ian had to be in Eugene for the cherries. So we got there in time.

Swent: Was there a graduation ceremony, then, for Ian?

Campbell: No, no. Neither one of us ever went through any graduation ceremony [laughs]. We just left. Then, that summer, after cherries, Ian went to Libby, Montana, I think that was a USGS mapping project. He was there for two or three summers. It was there he met Paul Henshaw. Paul went to Cal Tech as a result of that meeting. Betty Henshaw, Paul's widow, has just finished an oral history in this series. [Helen R. Henshaw, Recollections of Life with Paul Henshaw: Latin America, Homestake Mining Company, 1988.]

Swent: And you stayed in Eugene after the cherries?

Campbell: Yes, I think I must have, I don't remember particularly about that summer.

California Institute of Technology and Pasadena, 1931-1942

Campbell: We got together again and drove on south to Pasadena in September. We were met by the Buwaldas. Dr. John Buwalda was chairman of the department, and Mrs. Imra Buwalda was a very efficient and helpful person. She had a real-estate lady all lined up for us. We spent a day looking for a house to rent, and we found one.

It was on Drexel Place--a little dead-end street in Pasadena. We were at the end of the dead end, which we liked. It was very quiet because the street ended at the Huntington Hospital. Back of us, there was a tennis court, which was a joy to me, because I loved to play tennis; Ian did too. We used the tennis court a lot. I don't know who owned that tennis court, but we had the use of it.

Swent: Do you mind saying how much the house cost, and how much you were offered at these jobs?

Campbell: I don't remember what the salary was. I think we paid \$65 rent. The house had a living room, dining room, two bedrooms, and a kitchen and bathroom--a very attractive little house. And, as I say, a tennis court in back, which was really great. Our next-door neighbors, the Wrights, owned the house and were delightful people. They had children who were our age, and they played tennis with us. We were very good friends.

This was the Depression. We were very lucky, because we had a salary right through, although our salary was cut--I don't remember if it was the first year or second year of the Depression--because they said since the professors weren't teaching in the summer time, they didn't think they should have a salary. So we were cut by three months' salary. But Ian always had summer jobs, so it didn't bother us particularly. I believe he was at Libby, Montana.

Swent: Who else was in the geology department at that time?

Campbell: Dr. Buwalda was chairman of the department. Chester Stock was the vertebrate paleontologist, and a very famous person. In the earthquake center we had really top people. We had Hugo Benioff, Beno Gutenberg, and Charles Richter. Charlie Richter was a character!

Horace Fraser, Ian's roommate at Harvard, came later as an economic geologist. Before Fraser, we had Alfred Ransome; Jim Noble came after Dr. Ransome died. Probably Ian's best friend was John Maxson.

Swent: Jim Noble, I think, didn't go there until the forties.

Campbell: Until the forties? He came later.

I have to tell you one story about Charles Richter.

Swent: Please do. This is the man of the Richter scale, I assume?

Campbell: The Richter scale man, yes.

He was an absent-minded professor of the first order. We used to have black-tie dinners from time to time. And on one occasion, Charlie couldn't find his collar (they wore wing collars with studs and he couldn't find a collar) so he just tied his tie around his neck. [laughs] Margaret Stock and I nearly had hysterics over it, because the bow tie would bob up and down on his Adam's apple when he talked. [laughs] He thought nobody would notice. It was just like Charlie.

Swent: Did he have a wife who took all this in stride?

Campbell: Oh, yes. She was just as unconventional as he. [laughs]

The Stocks were grand people--very nice. It was a good group!

Swent: When were the dormitories first built? As I recall it was about 1932, along in there, that they built the dormitories.

Campbell: Yes. Yes, that's right. That's just when we came, and they were new. And the Athenaeum, the Faculty Club, had just been finished. The Balches gave the money for the Athenaeum. They were also very interested in geology. They had dinner parties every year at their elegant Biltmore apartment. These were black-tie affairs. Each of the geologists had to give a little talk about what he had been doing during the year. Dreadful!

The summer of '32, I went back to Ohio and was camp counselor at a YWCA camp. Then I went on from there to Cambridge, in September, to complete the thesis and take the final exam. I stayed until about Thanksgiving time. Ian had been in the field all summer. I had done a lot of work on my thesis that first year that we were in Pasadena. So it wasn't too terribly long a procedure to get it finished up.

Swent: And what was your thesis topic?

Campbell: I can't remember exactly. [laughs] It was on foraminifera from cores in Boston Bay. But what the exact title was, I don't remember.

Swent: Did you have to take a lot of cores out to Pasadena with you?

Campbell: Yes, I did. I got the forams separated from the matrix, and mounted them on slides, and identified them, and then made charts of what the different forams were in the different layers down from the top to the bottom of each core.

Swent: Were you doing this at Cal Tech using their facilities?

Campbell: No, I was working at home. Although I borrowed a binocular microscope from Cal Tech.

That first year at Cal Tech I audited a course given by William Morris Davis, who was one of the great physiographers of the last generation. This was the last course he gave. He was from Harvard, and he came west to retire, more or less. This was a marvelous experience for me. And my, he had an acid tongue. I was glad I was taking it as an auditor and not for credit.

Campbell: I also audited a course by Beno Gutenberg. It was awfully good of him to let me do it. But I didn't get much out of Gutenberg's course--it was altogether over my head mathematically. But I got a lot out of William Morris Davis's course.

We played a lot of badminton--that was our great social game in those days. We had a badminton club called the Falcons that included Cal Tech people as well as town people. It was a very nice group.

During those years, Ian asked me to edit Ph.D. theses for graduate students. I had edited his, and he liked what I'd done for him. There are four that I remember. I did a lot of work on one for Tom Thayer who later went on to be one of the senior members of the U.S. Geological Survey. One for Tony Rice who went on to be a senior member of the Canadian Geological Survey. One for Bob Webb who became a professor at U. C. Santa Barbara, and one for Bill Putnam who went on to be a professor at UCLA [University of California at Los Angeles]. This took a lot of my time and I think I made real contributions; the men were all very appreciative.

Swent: You were doing more than just correcting spelling.

Campbell: Oh, indeed I was, yes.

Swent: Sort of tutoring at the same time?

Campbell: Well, making suggestions for additions here and deletions there.

Ian was working full time, of course, and I was helping in various ways. I worked on his Libby maps, and I typed some of his field notes, which was really a labor of love. [laughs]

Swent: Ian's handwriting is notorious.

Campbell: Notoriously bad, yes.

He also gave me some French reports that he wanted translated, which I did.

Swent: Were you paid for any of these jobs that you did, or was it just a wife's duty?

Campbell: No, no. This was all a wife's duty. And, of course, I did quite a lot of volunteer work such as working at the hospital and dispensary, and taking sick people to doctors' offices, and working on Community Chest drives. All that would just normally be done by a faculty wife.

Swent: What did you do in the way of entertaining? Do you want to mention that now or maybe later? Your entertaining of the students was rather significant.

Campbell: Yes, our entertaining of the students was significant. We had enjoyed our contacts with faculty at Harvard, and we thought we would like to continue that sort of contact. So the first few years when the graduate group was relatively small, we had the grad students--two at a time--come over for dinner. That worked out happily, I think.

After we built our home on South Bonnie Avenue in 1936, we had regular groups. We always had a Ph.D. party for the new Ph.D.s and their wives in the spring. And we had a spring garden party. Ian had a contest in his petrography class for best hand specimen. Then there was the micrometric contest for the person who best identified the minerals in a thin section. This was a beer party in our back yard. The presentation of awards was always a great affair--a hilarious time was had by all.

Swent: Kind of a spoof, wasn't it?

Campbell: Yes and no.

Swent: A hand specimen is a particularly good example of rock?

Campbell: A piece of rock, yes. It has to be the right size and shape for display in a collection. And, of course, sometimes you'd chip and chip and chip and, at the very last minute when you thought you'd got it just right, you break the whole thing, and you would have to start over again.

Swent: So one award was given for the best hand specimen. And the other one was for the best identification of minerals in a thin section.

Campbell: The one who told what minerals were there and in what proportions.

Swent: And you had a Christmas party?

Campbell: And then we had a Christmas party, a wassail. This was on Christmas "Adam", the evening before Christmas "Eve." We had the wassail in two parts. In the afternoon, from 4:00 to 6:00, we had the faculty. Then we would wash up all the dishes and grab a bite of dinner. Then we would have the students in the evening from 8:00 on, indefinitely.

Swent: This is just curiosity. What types of things did you serve at these parties?

Campbell: Well, the wassail itself was what was called a porcupine punch. It was a burgundy wine with whole lemons pierced with cloves--those were the porcupines--and then I think there was sugar added. The whole thing was mulled and served from a big bowl.

Swent: Did you do this yourself or did you have help?

Campbell: Oh, no help for the wassails. Then we had fruit cake and cookies and nuts. I don't remember. Plenty of food to eat.

Swent: What sorts of things did you serve for your dinners?

Campbell: There was a beef burgundy that I liked very much that was made in a big pot with wine. I was never much of a cook, but they liked it.

Swent: But you did a good deal of cooking.

Campbell: In the early years at South Bonnie, we almost always had a junior college girl with us. We lived very close to Pasadena Junior College--they loved to live with us because they had just a few blocks to walk to school. And that was very helpful.

Swent: We do want to have you tell about the house that you built, too, but that was later?

Campbell: Yes, I'm about to get there.

1934 was a big year. 1934 was the year our son was born. Dugald Robbins Campbell was born October ninth. His arrival changed my life considerably. [laughs]

Swent: You got your Ph.D. in '33?

Campbell: Yes.

Swent: And were you intending to teach?

Campbell: No, I wasn't. I would like to have had a job, but there was nothing at Cal Tech, it was all men. The only place I could have had a job was in Los Angeles with one of the oil companies. But driving back and forth--that was before the freeways--would have been just impossible for me; I couldn't have done it. So I had a child.

Also in 1934, we had a telegram from Dr. Palache at Harvard offering Ian the professorship of mineralogy at Harvard. That really put us on the spot. Should we go back; should we not? Here again, the fact that Flora and George Houck were in Los Angeles was a big item in our decision. And, of course, the weather was just absolute perfection in Pasadena at that time.



Ian Campbell, Iron Mountain, New Mexico. April 1943.

Photograph by Richard Jahns

Campbell: It was a young college and making a reputation. Harvard was already there. Ian felt that the challenge was in Pasadena. He loved the West Coast. So we went back and forth and back and forth in our thinking. Then Ian had a long talk with Dr. Millikan.

Dr. Millikan asked him to be an associate professor at Cal Tech rather than assistant professor, and gave him \$3,800 a year; that was a raise, apparently.

Swent: It must have been a significant raise.

Campbell: It must have been a fairly good raise. So that will give you some idea about salaries in the thirties.

So we decided to turn down the offer at Harvard, with great reluctance on my part. But our friend Cornelius Hurlbut got the job, and we were very pleased about that.

In 1935, Ian and Johnny Maxson had their first trip to the Grand Canyon and did a lot of work on the Archean rocks. For many years this was Ian's greatest interest geologically. The Carnegie Institute of Washington financed the work. Johnny and Ian decided that they wanted to go down the canyon in boats. There were three boats. We took them over to the canyon in trailers from Cal Tech. That was a wild, wild trip.

Swent: And you had a little baby along on this expedition?

Campbell: No, the baby wasn't with us. He was taken care of at home.

Swent: Is this the first time that geology had been done down in the canyon?

Campbell: No. Powell, of course, had done geology in the canyon many years before. It was, I guess, one of the first purely geologic expeditions down on the river.

They had three wooden boats, decked over, and three boatmen. Ian was in charge of the expedition. The geologists were John Maxson, Jack Stark from Northwestern, Bob Sharp, and Eddie McKee who was park naturalist.

They were gone for about six weeks, running rapids, climbing the canyon walls, and studying rocks. It was a really very dangerous performance. They went down in low water because they wanted to see as many rocks as they possibly could. So the rapids were very dangerous, all the rocks being close to the surface.

Swent: It must have been a big job to plan a six-weeks expedition, because there weren't any supplies available down there.

Campbell: Oh, it was. They came out at Grand Canyon Village, hiked up, and I met them there. I had a list that Ian had sent of things he wanted me to bring. That list went all over the Cal Tech geology department trying to interpret his writing. [laughs] There was one item that I never did get. It was supposedly oranges, but-- [laughs]

Swent: [laughs] Even you couldn't read it?

Campbell: Even I couldn't read it. But I got everything he asked for.

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Campbell: At Grand Canyon Village we all had dinner at the McKees'. Then, the next day, I walked down with them, and I had a ride on the boat from the foot of the Yaqui Trail over to Phantom Ranch. I was probably the second woman to have ridden a boat on the river; the first one never came out.

Swent: I see. You said that the grant for this was from the Carnegie Foundation, and they got it through connections at Cal Tech.

Campbell: Yes, through Dr. John Merriam and Dr. Buwalda--they were very good friends. Dr. Merriam was chairman of the Carnegie Foundation at that time.

Swent: Did your husband have to spend much of his time and energies on getting grants?

Campbell: No. I don't remember any trouble. Carnegie Institute was fairly active there at Cal Tech because they had a lot to do with the telescope at Mt. Wilson. So there were people out there a good deal of the time.

Swent: How did geology rank in the Cal Tech hierarchy? Astronomy, of course, was very high.

Campbell: Astronomy was strong, and physics was strong because of Dr. Millikan and Dr. Anderson.

Swent: Did geology have to fight for attention?

Campbell: Geology had to fight for attention, but the department was building up fast by getting Gutenberg, and Benioff, and Richter. Those were all names to conjure with. And Ransome, and Stock-- they were all really top-notch people. So it ranked pretty high.

Swent: And you felt that the administration was back of you?

Campbell: Yes.

I must mention one other event of the early thirties. In September of '33, we got two Persian cats. We had those cats for sixteen years, and they were part of the family. I'm sure many a geologist around the country will remember being stopped by the Campbells' front door, and, before they left, Ian would get out a little vacuum cleaner to get the grey cat hairs off their dark suits. [laughs] Ian never had a blue suit in the house. For years he kept his tuxedo and a navy blue suit at his office at Cal Tech; he just wore grey suits at home.

Another big event was in '36 when we built our house at 405 South Bonnie. There were three families--all badminton players, all at Cal Tech--who were thinking about buying houses. We discussed our plans at length. We found a little dead-end street, quite close to Cal Tech. It had been in an estate and had been sitting there undeveloped for generations. The estate was finally settled, and the street was opened up for sale. The three of us got three adjoining lots on one side of the street.

The Frasers got one on the opposite side of the street, but that didn't work out because Horace Fraser had to have an appendectomy and couldn't afford to buy a lot and have an appendectomy too.

But the three of us--the Campbells, and the Davieses, and the Gilberts--all got the same architect and built our houses side by side. The badminton court was on the middle lot, because that was what had brought us together (the badminton playing), and we all were interested in it. Godfrey Davies who had the middle house was very pleased to have the badminton court. Godfrey Davies was a historian at Cal Tech and the Huntington Library. Horace Gilbert was a professor of economics at Cal Tech. Our back yards were all thrown together. The houses were all well integrated, of course; we didn't look into each other's windows. It turned out to be a very satisfactory arrangement for many years.

The houses were pictured on the cover of Sunset Magazine and on the cover of California Arts and Architects. It was a new idea, and a different idea. It was very modern.

Swent: What was new and different?

Campbell: Oh, corner windows, and the fact that the houses were all planned together.

Swent: No fences.

Campbell: No fences. Two of the houses had roof lines going one over the other. Our garage and the Davies's garage were built together. That gave us more space for our side yard. It worked out very happily for all of us.

Swent: You had a lot of built-in things.

Campbell: A lot of built-in things. We would lie awake nights thinking about what we could build in and how it would work.

Swent: Ian took an active part in planning this?

Campbell: Oh, very much so. We lived there happily until we moved to San Francisco in 1961.

Swent: And, of course, your furniture is still up to date, isn't it?

Campbell: Yes, that's right.

Swent: It is Danish?

Campbell: That's right, yes.

Swent: Beautiful.

Campbell: It was in that house, of course, that we had our Ph.D. dinners, and our wassails, and our spring garden parties--on and on, year after year. There are still wassails going on, I'm sure, around the country--students carrying on the tradition.

Swent: Who was your architect?

Campbell: Adrian Wilson and Erle Webster. We considered Neutra. The Richters had a Neutra house. He was a very modern architect, but we decided we didn't want to go quite that modern. Also, the Gilberts weren't anxious to be that far out.

Swent: The houses are still there?

Campbell: Oh, yes. They're still occupied by people connected, I think, with the Huntington Library.

To go back to our pre-World War II years. We did a lot of traveling back and forth to northern California to go to meetings such as the Cordilleran section of the GSA. Ian had friends at Stanford--Si Meuller, for example, who was a friend from the University of Oregon; Hubert Schenck was another friend from the University of Oregon. They used to stay with us when meetings were in southern California, and Ian and I would stay with them

BRANNER CLUB MEETING

A regular meeting of the Branner Geological Club was held at the Clark Hotel, Los Angeles, Feb. 23, 1937., with President Grægerson presiding.

Following the dinner, the minutes of the last meeting were read and approved. An announcement was made seeking to obtain identification of two members^{wh} had neglected to include their names when sending in their annual dues. Up to a late hour in the evening, no claims had been made. This surprising circumstance may be attacked by the method of multiple working hypotheses, by which it would appear that:

- a) The two members were present but figured it was worth 50 cents not to have to reveal their absent-mindedness.
- b) The two members were present, but are so rich that they don't care about 50 cents more or less.
- c) The two members were not present.

*all but two members
made a mistake*

Hypothesis (a) would point to college professors; hypothesis (b) would point to oil geologists; hypothesis (c) might point to Scotchmen. The problem remains unsolved.

The speaker of the evening, introduced by President Grægerson, was E. L. McKee, Park Naturalist at Grand Canyon National Park. Mr. McKee presented, in interesting detail, the results of his studies on the Kaibab formation (Permian) of Northern Arizona; illustrating the systematic changes which take place both laterally and vertically within this formation.

Following the paper by Mr. McKee, an interesting discussion took place. Before this became stalemated on the question of whether the same geological section can be both remarkable and commonplace, the meeting was adroitly adjourned by President Grægerson.

Dinner attendance, 41; total attendance, 42.

Tom Campbell

Acting Secretary &
Vice-President

Campbell: when we went up to northern California meetings. It was a very nice relationship, and it was important to keep a friendly relationship between the two colleges (Stanford and Cal Tech).

Swent: How many courses was Ian teaching at this time? Do you know?

Campbell: I don't know. He gave quite a number of lectures in Dr. Buwalda's course, as well as his own petrology and mineralogy.

Swent: And, of course, advising graduate students?

Campbell: And advising graduate students.

Swent: Was he teaching undergraduates as well as graduate students?

Campbell: Yes.

Swent: Did he have department duties also?

Campbell: Very much so. Dr. Buwalda put quite a load on him. And Ian had to make a definite decision, I can't remember exactly when it was. Dr. Buwalda asked him to be associate head or assistant head of the department. It meant that Ian wouldn't have time for research. Ian said he thought he would like the administrative part of it, and he did. From that time on he really did very little research on his own.

Swent: He did belong to many organizations.

Campbell: Many organizations. The first note that I have in my diary about being president of a club was in 1938--he was elected president of the Branner Club, which was a southern California geological club. I got a note from a friend of mine in southern California just the other day telling me about the minutes that Ian had written on one occasion--perfectly delightful! I'll have to show her letter to you. He always had a touch of whimsey in his writing.

As I say, we went to GSA meetings and AAPG [American Association of Petroleum Geologists] meetings around the Bay Area, in southern California, and also Seattle. I remember one particular field trip when we went up the Columbia River and into eastern Oregon that was led by Richard Foster Flint of Yale. It was a particularly interesting trip through the scablands.

Ian had hoped, when Horace Fraser was at Cal Tech, to write a text book on petrology--a book which was badly needed. There were to be three authors: Ian, and Horace Fraser, and Howard Powers. Howard was then head of the Volcano Observatory in Hawaii. They were all very good friends, having known each other at Harvard. But the war came along and that project never got off the ground.

The World War II Years, 1941-1946

Campbell: In 1941, Ian was asked to be on the South Pasadena draft board. That was another thing that took a vast amount of his time. It bothered him because there were Jehovah's Witnesses in his district who believed that they were ministers. Of course, ministers were deferred, but the draft board didn't see it their way--that every member of the church was a minister. So the board had to send them to jail, which really hurt Ian because they were dedicated people. It seemed so hard to do. [sighs] He was on the draft board for years and spent hours and hours of time there.

Swent: This was a municipal responsibility, wasn't it?

Campbell: His district was in South Pasadena, but the draft was nationwide.

Swent: Well, yes. It wasn't just Cal Tech. This draft board work was before Pearl Harbor?

Campbell: Yes. It started before Pearl Harbor.

Swent: Your son was starting school?

Campbell: Oh yes. In 1941, Dugald was seven years old. He rode his bicycle back and forth to Hamilton School--not too far from South Bonnie Avenue.

In the summers, during these first years of the war, Ian was working in Chewelah, Washington, on a manganese project--part of the strategic minerals section of the USGS. The work was reported in a USGS bulletin a good many years later.

Ian was becoming very restive. There were very few students at Cal Tech because they were all in the army except the 4-Fs [deferred men], so the teaching load was light. He was very happy when Dana Russell (an LSU connection) called from San Diego to ask him to come to work for the University of California Division of War Research [UCDWR]. They were working on sonar (underwater sound) problems. Ian had a very keen ear and he was very good at differentiating the tones of the pings from the sonars. He, of course, worked on their reports, and he worked on training submariners. He was sent up to Bremerton to train the men at the submarine base there. He worked at UCDWR for about three years.

Swent: Did he actually leave Cal Tech then?

Campbell: Yes. He was working full time in San Diego.

Campbell: We plowed up our side lawn for a victory garden, and I felt that I must do something too. So I took a drafting class--topographic map drafting. It was the closest thing I could think of to anything that was related to geology. One of the professors at Cal Tech, Dr. Michael, gave the course. As we got toward the end of it, several of us were picked out to join a long-range weather forecasting unit that was part of the Army Air Force. The unit was led by Major Irving Krick who was a professor at Cal Tech in meteorology. So I ended up with a full-time job, six days a week. Ian was gone. In addition to my job, I did all the yard work, raised vegetables, and ran the house. Thank goodness for the junior-college girl who was living with us at this time. She was a great help.

My father had died in '43, and my mother came out to live with us, which was very helpful because that meant Dugald had somebody there when he came home from school. It was good for her too because it gave her some responsibilities.

Swent: Where was your job?

Campbell: It was at Cal Tech. That was where the unit was stationed.

Swent: It was weather forecasting?

Campbell: Weather forecasting. We had to draw isobars on maps, trying to figure out what the weather would be as far ahead as a week, which was pretty difficult to do--still is.

The unit was working at that time on a book on trafficability in Europe. That means whether it would be possible to get trucks here or there, and what the surface of the land was going to be like for landings and maneuvers in dry or wet weather. I was never very good with my hands, but I was good at editing and writing, so they got me into editing and writing the trafficability book which was somewhat in my line. And that was good.

I continued there until the unit folded, which was near the end of the war, spending most of my time on editing.

After that, there was a Russian translation unit that was set up at Cal Tech. Three Russians were translating and, of course, what came from them was strangely worded. So I was able to help. It was a real challenge for me. [laughs] I worked it out so that I talked into a dictaphone, changing their sentences around so they sounded right. The typist would work from my dictaphone record.

Swent: What sorts of things were they translating?

Campbell: This, again, was weather mostly, and it was interesting.

Then that unit folded up in September of '45, and I went to another group, also at Cal Tech. This work was paid for by Cal Tech rather than being under civil service which the others were. It was editing a final report. The book was entitled Aircraft Torpedo Development and Water Entry Ballistics. It was a huge tome, about 400 pages long. I carried it from the very beginning to the end, doing the editing of the manuscript, and then proofreading the typists' typescript, and then marking for the printer, and then pasting up the layout, scaling the figures, doing the tables, and counting type in points and picas.

Ian was back by this time, of course. Everything was running on a normal schedule at Cal Tech. There were a lot of students, and very high-caliber ones. They were all older and knew what they wanted to do--a very challenging situation.

But I was anxious for a job, and something turned up at the U.S. Naval Ordnance Test Station. The main center for the Naval Ordnance Test Station was in China Lake out in the desert, but there was a Pasadena Annex. And it had a reports section, and there was a job opening for an editor. So that's where I went in 1947.

Ian was consulting for Southern California Edison at Lake Edison in the Sierras, and Dugald was working there on the dam during the summers. It was interesting that Ian was doing the consulting for the job, and Dugald was doing the actual on-the-job work.

I think that's a good place to stop, because the war was over and we're back to a more normal life.

Swent: And you're embarked on your career with the navy.

Campbell: Yes, I worked there until I went to USGS in 1961.

The Post-World War II Years in Pasadena

[Interview 3: April 11, 1988] ##

Campbell: In talking about the next fifteen years, I thought I would organize my story by starting out with Ian's job, then my job, and then our joint activities.

Swent: And this was the end of the war?

Campbell: This was the end of the war and everybody's back to normal in Pasadena. Even our side yard was back to lawn instead of a vegetable garden.

Ian's Activities

Campbell: The character of the student body at Cal Tech was tremendously different after the war. Most of these students had been in the service and were coming back much older--many of them married. It was a very stimulating group of students, something that was just wonderful for all the faculty--they'd never had anything quite like it. The students knew what they wanted, and they worked full tilt to get all that they could from their studies.

There were a few things that went on that were connected with the war and yet not connected with it. One of them was a project called VISTA. I have never had any idea what the letters meant--it was a highly secret thing. But Ian was one of the faculty members who was asked to be on it, and there were many military men as well. This involved quite a bit of Ian's time and several trips to Washington.

During this period the character of the department at Cal Tech changed markedly. Horace Fraser did not come back after the war, Johnny Maxson did not come back, Lloyd Pray left. New people and a new general outlook came into being. People such as Harrison Brown came, Heinz Lowenstam, Clair Patterson, Lee Silver, Hugh Taylor, Gene Schumaker--they were moving away from hard-rock geology and field work back to a more laboratory-oriented department with very sophisticated equipment, very high-tech. And it was a real fundamental change in the outlook of the department--geophysics, geochemistry, astrogeology taking the place of the hard rock, economic geology type of program.

Swent: Were there hard feelings over some of these changes?

Campbell: No, I think the changes came gradually. It seemed to be the appropriate thing to do at that time, and it has continued this way.

Swent: Was this in response to something out there?

Campbell: In a way it was in response to the way that the department was moving. John Buwalda, who was chairman, had a heart attack in 1948 and decided that he did not want to remain as chairman of the department. The next one in line was Chester Stock. Everybody thought he wouldn't take the job, but instead he thought he would like to be chairman. He held the job until he died in 1950.

Ian continued as executive officer. He did all the checking of graduate students' admissions credentials and wrote innumerable letters. I've had any number of people tell me, "The reason I went to Cal Tech was because I had such a wonderful letter from Ian Campbell answering all my questions--such a warm, welcoming letter. It was much better than any other college sent," and so they came to Cal Tech. He was very careful about his letters, and he did write beautiful letters, no question. I've heard that from many sides.

Swent: Did he have anything to do with selection of undergraduates?

Campbell: Not that I remember. I think that was probably done in the admissions office rather than in the various departments.

Chester was on the GSA council when he died, and Ian was asked to fill out Chester's term. This is quite an important position to have. Ian was on the council for several years finishing Chester's term, and then he was nominated and elected for another term, so actually he was on the council more years than anybody had ever been before, because he had a double term. He got to know geologists from all over the country during that period of association with other members of the council.

There was an interim after Chester's death when Ian was actually acting as chairman of the department at Cal Tech. There was much discussion and a great deal of churning about until 1952 when Bob Sharp was made chairman of the department--a position which he continued to fill for years.

Swent: This was succeeding Chester Stock.

Campbell: Succeeding Chester Stock, yes.

Swent: Somebody had told me once that there was a difference of opinion, or difference of emphasis, that Silver was one of the people who--

Campbell: Lee Silver, didn't I mention him?

Swent: Yes, you did. And he was very strongly on one side. He was in favor of--

Campbell: --the emphasis on geochemistry.

Swent: I guess so, yes. Who was the leader? Is it your perception that Silver was kind of a leader of that group?

Campbell: I wouldn't know that.

Swent: This is a name that somebody had mentioned to me--

Campbell: Yes. Bob Sharp had a more hard-rock kind of approach.

Swent: And how would it evidence itself, in the kinds of classes offered?

Campbell: Yes, and the amount of money that went into equipment and that sort of thing.

Swent: By hard rock you mean--

Campbell: Field work, mineralogy, petrology.

Swent: And the other group wanted to do more laboratory research.

Campbell: Yes, that's right.

Swent: Was there any connection or any influence brought to bear on this by corporations, for example? Oil companies?

Campbell: This I wouldn't know. Ian would be able to answer you right away about the number of people who came interviewing at the end of each year recruiting students for jobs.

Swent: That might have had some effect on it.

Campbell: It might very well have had some effect, but it would be nothing that I would have heard about, probably.

Swent: And the allocation of money was done by the department chairman?

Campbell: Probably in connection with people in the administration.

Swent: Did Ian enjoy this administrative kind of thing?

Campbell: Yes, I think so. He took it very seriously--he spent much time on it. Bob thought that he spent too much time. During these years he was consulting for Southern California Edison. And

Campbell: here Karl Terzaghi played a large role. Karl was one of the great engineering geologists of his time and quite a character. I think I'll just mention one episode that might be of interest, because Karl Terzaghi was really a great man.

Swent: He was with Southern California Edison?

Campbell: He was on the consulting board for the foundations of the dams both at Lake Edison and at Mammoth Pool. Southern California Edison was putting in dams for hydroelectric power. On one of their trips to look over the ground before making recommendations, the consulting board arrived in Fresno on a hot, hot day. They decided to have dinner in Fresno before going up to the dam site. Karl was always the one who ordered the wine. They were having beef, so he ordered red wine. They brought the red wine and gave him a taste. He shook his head and said, "No, this is no good. This is chilled. Red wine should be room temperature. Send it back." So they sent it back. Ian said he'd never heard anybody send back wine before, so it was quite a performance. When it came back, it was about 100 degrees. [laughs] He said, "I'm sorry, send it back and chill it just a little bit." [laughs] So the third time it came back, it was all right. [laughs]

They had great times on their consulting trips up to the mountains east of Fresno.

Swent: Had they known each other before?

Campbell: Yes.

Swent: How had they met each other?

Campbell: Karl was at MIT when we were at Harvard. Ruth Terzaghi, nee Ruth Doggett, was the other woman graduate student at Harvard when I was there--a year or so ahead of me. And so we knew them at the start of their careers back in Cambridge. It was fun to have them appear on the scene again in Pasadena.

Swent: So you're building up an "old girl" network then as well as an "old boy" network.

Campbell: [laughs] That's right.

Swent: Did she continue in geology?

Campbell: Yes she did. She became an honorary member of the Association of Engineering Geologists.

Swent: Was she working at this time as a geologist?

Campbell: She may have been, I really don't know. I haven't seen her for years and years. She's still alive as far as I know. Somebody, Mrs. Mather I think it was, sent me a clipping from one of the Boston papers. She was having her eighty-fifth birthday a while back and was still active.

Swent: Wonderful.

Campbell: The last summer for Ian at Chewelah on the magnesite project was 1949. I looked up the USGS bulletin that gave the results of the work in Chewelah; it was published in 1962.

Swent: From 1949 to 1962?

Campbell: This is not unusual. I'll mention this later when I tell about my own activities at the Survey.

Swent: That's a long time!

Campbell: In the meantime Ian was doing other things such as working with the Boy Scouts with Dugald. I remember one of their expeditions was to the Mitchell Caverns in the Mojave Desert. Dugald was very pleased with the way his father handled that outing. I think he was a bit suprised that Ian had given it so much time and thought. It turned out to be a very successful trip.

We had many important people coming through Pasadena for Geology Club and Branner Club. I went to all these meetings with Ian. People like Jim Gilluly from Denver, Roger Revelle, Kirtley Mather, Phil King, Frank Press, J Harlan Bretz--all names to conjure with in the geologic field.

Ian also was asked to be on the YMCA board at Cal Tech. The YMCA had what they called "fireside meetings" in various faculty homes and ours was one of them. We had on various occasions twelve freshman boys for dinner with a speaker or a visitor from some foreign country that the YMCA had garnered. These meetings were fun, although it was quite a chore for me.

Swent: Did you have to feed them dinner?

Campbell: Yes, we gave them dinner, and then we sat around and talked after dinner.

Swent: Twelve freshman boys for dinner? That's a lot of food! [laughs]
But what a nice thing to do.

Campbell: Yes, it was a nice thing to do.

Sometimes the YMCA had important speakers. One that stands out in my mind whom Ian introduced was Martin Luther King.

Swent: This must have been quite an influence on your son also.

Campbell: Yes, he was around a good deal of this time.

Swent: Was your mother still with you?

Campbell: My mother was with us until 1948. Then she moved up to Santa Barbara.

Swent: So you met Martin Luther King. Was he in your home?

Campbell: No. He spoke at a dinner meeting at the Athenaeum.

Swent: Did you have any idea at that time how important he would become or who he was?

Campbell: No, but he gave a very good speech, I remember that. It was a memorable evening.

Ian also contributed greatly to the health insurance committee. Many people at Cal Tech felt this was one of his great contributions. It was just at the time when health insurance was coming into being, and he managed to get it started at Cal Tech. He was influential on that committee.

Swent: Was he working with a board at the institute?

Campbell: Yes. It was not geology. In 1954 Dr. Buwalda died, and that was a great shock. But he hadn't been very active in the department for some years; he had given up the chairmanship in 1948.

In 1956 Ian led the summer field camp in New Mexico. He enjoyed it enormously and made some very good friends. Barclay Kamb who is presently Provost of Cal Tech was his tent mate and they became special friends. Barclay was the chairman of the department for some years; then recently he was moved up to be provost.

Swent: This is a summer field trip for geology.

Campbell: Yes, for geology majors. It was held in the Zuni Mountains, near Grants, New Mexico.

Swent: Were there students from other institutions as well or just Cal Tech?

Campbell: I think it was just Cal Tech.

Swent: You said that he had gone on several Grand Canyon expeditions. It was not just one expedition, it was several, wasn't it?

Campbell: Just one boat expedition, but other camping expeditions down in the canyon.

Swent: Okay, but just the once in the boats.

Campbell: Just the once in the boats.

Another of Ian's activities was with the American Association of University Professors. He'd been elected to their board by a vote of the members of all universities in the country. And he was on a committee which decided on the appeal of a professor who thought that he wasn't getting proper treatment from the university.

He had two interesting cases. One was at Long Beach State College and the other was at Princeton. He went to these colleges and interviewed people and helped the committee make a decision as to whether the university should be penalized or not.

Swent: Do you remember what sorts of things they were on the carpet for?

Campbell: It was an individual professor who felt he should have tenure, but he was not granted tenure--that sort of thing.

Swent: Was this the beginning of the red-baiting years? The loyalty oath and those sorts of things, were they coming in at that time?

Campbell: I don't remember that.

Swent: When was McCarthy--

Campbell: I don't remember what years McCarthy was active.

Swent: About that time, I think.

Campbell: Maybe so. Maybe it was something to do with it.

Another consulting job he had was with an oil company up in Oregon, and he loved that. He had a couple of summers there doing the geology. He had Marvin Lanphere (one of his Cal Tech students) with him one year and James Conel (another Cal Tech student) the other summer. He was very glad that the test well that the company put down did not come up with any oil. [laugh] He didn't want to find oil in Oregon.

Swent: He was not really a disinterested consultant then?

Campbell: No, Oregon was his beloved state. [laughs]

Swent: [laughs] Why?

Campbell: Oh, just the idea of oil wells that would mar the landscape.

Swent: He didn't like the fact that they brought in a lot of people?

Campbell: That's right.

One other interesting episode. One of his students by the name of Al Saplis was in the war and on Guam or Okinawa. He decided that if he came through this terrible barrage he would become a priest. And lo and behold he did come back, majored in geology, got his degree, and then went into the priesthood. He was very fond of Ian so he invited Ian and me to his ordination and his first mass. We went down--I think it was to Long Beach--and Ian made a speech along with all the priests. Ian just did it beautifully. It was a very interesting experience. We kept up with Al Saplis for a good many years after that. He was a priest in various towns in southern California.

Swent: A parish priest?

Campbell: A parish priest.

Swent: Not teaching geology?

Campbell: No, no.

Another honor for Ian was to be elected president of the Pacific section of the American Association for the Advancement of Science (AAAS). We went to Provo, Utah, for the annual meeting and Ian gave his presidential address--one of the best talks I think I've ever heard him give. I think he must have memorized it. He just stood there and talked--a wonderful speech.

Swent: Is there a copy of it somewhere that we could look at?

Campbell: I wish there were, I don't know.

Swent: In their proceedings perhaps? What year would this have been?

Campbell: It was 1958.

In 1959 Dick Jahns left Cal Tech to go to Penn State. And in 1959 Ian left to go to San Francisco.

Swent: At some point I'd like to have a little mention of how you made this decision to change and move from Cal Tech. Have you planned to mention that at all?

Campbell: No, I hadn't. It was a difficult decision.

Swent: It must have been. I think it's important to know how you came to make that decision. It must have been a difficult one.

Campbell: It was more difficult for me than it was for Ian I think, because he felt the time had come to leave Cal Tech.

And Dick Jahns really pushed him hard because Dick wanted Ian to be Chief of the Division of Mines, and thought it was an opportunity.

Swent: Dick was up here at Stanford?

Campbell: No.

Swent: Where was he?

Campbell: He was on the faculty at Cal Tech.

Swent: Did he come later to Stanford?

Campbell: Yes, but quite a bit later. In between, he went to Penn State and then he came to Stanford.

Swent: But he was at Cal Tech at the time.

Campbell: Yes. And then he moved.

Swent: Maybe you'll also say something about your son's schooling, where he was going to school at these times.

Campbell: He went to Whitman for two years.

Swent: That is to college?

Campbell: Yes, to college.

Swent: Where did he go to high school?

Campbell: He went to high school in Pasadena--Pasadena City College. Then he went for two years to Whitman. Then he joined the army. This was during the draft time, and he hated the fact that it was hanging over him. He could have been excused, but he didn't want to be. So he went in the army and was stationed at Fort Baker for awhile, and that was a wonderful station. Then he went to Fort Belvoir in Virginia and had a very good time there, because he went to visit friends of ours at the Survey.

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Campbell: Then he went to Seoul in South Korea. And then he went to the University of Colorado and got his degree in civil engineering, came back, went to work, got married. He married Dorothy Tomlinson in June 1958. They had met at Pasadena Junior College.

Swent: How did he happen to choose the University of Colorado?

Campbell: I don't know--friends, I guess.

Swent: You didn't push him for Cal Tech?

Campbell: No, we didn't push him at all. He wasn't Cal Tech caliber. But he's a good civil engineer. Any other questions?

Swent: No, not right now.

Catherine's Activities

Campbell: All right. Now we'll go back to my activities in Pasadena in the years after the war.

Swent: You had been working six days a week and running a household and doing a victory garden.

Campbell: Yes.

Swent: I don't know how you could do that.

Campbell: Everything calmed down after the war and, as I said, the side yard victory garden went back into lawn.

Swent: To your great relief.

Campbell: To my great relief. I was working only part time because I felt that I should do my job at home, be there with Dugald when he came home from school in junior high and high school.

I worked for the Office of Naval Research with a Mrs. Mabel Rockwell. This was a small office. I can't remember exactly what we were supposed to be doing, but I remember the first report that I was given to edit was something on strategic minerals. I felt something was wrong with that report. I told Mrs. Rockwell that I thought we really ought to have somebody from Cal Tech--Dick Jahns in particular--come and read that report, because I thought that they were using material that was completely outdated.

Campbell: So Dick came and went over it and he corroborated my fears. Mrs. Rockwell was very pleased because she said this would have embarrassed the office if we'd published it. I was glad my geology came into play.

I was still on the Cal Tech payroll at that time but then in 1949 that office also closed--the ONR office--and I went to the Naval Ordnance Test Station (NOTS) in Pasadena. This was the annex of the big Naval Ordnance Test Station at Inyokern--the Pasadena Annex.

There we had reports, reports, reports, you couldn't believe the number of reports. We were testing the various torpedoes; the Mark 32 and the Mark 42. We were testing the anti-submarine rocket called ASROC. We had a variable-angle launcher at Morris Dam in the hills above Pasadena. This great contraption could change the angle of entry of the rockets as they came into the water. They were all heavily instrumented so that we could tell what happened to them, how they would perform, if they were shot from a naval vessel.

We had quarterly reports, we had annual reports, we had semi-annual reports--it was just deadline after deadline after deadline getting them out on time. I was head of the editorial group which consisted of three or four editors and about three manuscript typists. The reports were typed directly on duplimat plates that were then sent up to Inyokern for printing on an off-set press.

We also had reports called Significant New Items that came out every few weeks.

Swent: Someone else was turning in the data to you?

Campbell: Yes, and we were editing and assembling it and getting the illustrations in and reduced to the proper size. All line drawings were done directly on the duplimats after the typing had been done, so that we did layout too.

Swent: This was all very secret?

Campbell: Most of the reports were either confidential or secret.

I noticed in my diary that in 1950 printed circuits were first being made in our photo lab. This was the first miniaturization, the first digital-equipment material that I came in contact with--digital data instrumentation.

I worked especially hard on a five-year report. I wrote the outline for it and figured out who would contribute the different parts.

Campbell: In 1952, the Korean War meant we had a tremendous expansion, of course. We had to move. We moved to the Vista del Arroyo Hotel which had been used during the war as a hospital and then was given over to the navy. I had a wonderful suite of offices for the reports and illustration group. Among the offices was one small room that had been used, while it was a hospital, for hearing tests. It was completely padded all around. [laughs]

Swent: Like Marcel Proust.

Campbell: So whenever I had something very important that had to be done right away, I'd go into my little hide-a-way and shut the door and say, "Nobody disturb me." [laughs] It was completely quiet, and I could get a tremendous amount done in short order.

Then of course there were many trips to Inyokern back and forth by plane to check with the larger Publications Branch there, where they did all the printing.

In 1952 we had the Tehachapi earthquake which shook us all up. That meant quite a number of field trips which were fun.

Swent: Field trips for you?

Campbell: For both of us.

Swent: For Ian as well?

Campbell: Yes. Different geology clubs had field trips. Ian wasn't especially involved, but Dr. Buwalda was very involved--it rejuvenated him.

One of my old Mt. Holyoke friends visited us for a while in 1951. She was working on subsidence problems for the Survey.

Swent: What was her name?

Campbell: This was Alice Allen. I think I've mentioned her before. She was one of my majors at Mt. Holyoke. It was fun to have her come back on the scene.

The war in Korea ended around '54, and our offices moved back to the Foothill Plant where we had been before.

Swent: Was your son in the army at that time? You said he went to Korea.

Campbell: No, he was in the army after the Korean War, but he was still called a veteran of the Korean War. He was in Seoul, yes, but after the fighting.

I had a great deal to do with the prime contractor for the ASROC [Anti-Submarine Rocket]—Minneapolis-Honeywell. Honeywell was doing all the operational manuals. It was quite a responsibility to get them approved, checked, and then back for printing.

About this time our branch head resigned and I was asked to take the job. The branch included the editorial group--the reports group, as we called it--the illustration group, the photo lab, and the library. So I had about twenty-five people at one time working for me, which was quite a responsibility.

And there were troubles, troubles, troubles. I had two alcoholics to deal with. One was in the reports group. She went to Alcoholics Anonymous, and came out of it. The other one was a librarian and really a fine woman. I took her to a psychiatrist a couple of times to talk things over, but we finally just had to let her go. We tried hard.

Then I had one homosexual in the library who was a problem because he was a good man and a good worker but the security people refused to let us keep him. They said he might be a problem.

I had a schizophrenic in the library [laughs] and she just left--bang. I was very glad. She invited me to her house and gave me a drink. I was afraid I might be poisoned because we had had some difficult confrontations.

Anyway, all kinds of excitement.

We had a group called the Interlaboratory Committee on Editing and Publishing. This included my branch in Pasadena, the Inyokern branch of publishing, the Naval Electronics Laboratory at San Diego, the Naval Ordnance Laboratory in Ontario, the Naval Rad[iation] Lab at San Francisco, and the Research Lab at Port Hueneme. The heads of all these naval laboratories got together every now and again--every six months perhaps--to discuss our problems and our various ideas. That was a very worthwhile and stimulating group, and I was delighted to be a part of it. I was secretary of the group for one year. It was quite a job.

Another of my activities was being on the civil service rating board. I graded hundreds of application forms of people who wanted jobs as editors or as illustrators. I also worked with the Civil Service Commission on the standards for both illustrators and editors.

Swent: And you yourself were a civil service employee?

Campbell: Yes.

Swent: A civilian working for the navy?

Campbell: A civilian working for the navy, yes.

I did a lot of work with personnel at the Naval Ordnance Test Station. That experience stood me in good stead when I got to the Geological Survey, because I really knew my way around in personnel matters.

Swent: You were actually approving employment applications?

Campbell: Yes, saying that applicants were qualified or not qualified for given ratings--GS 7, GS 8, 9 or whatever.

For outside activities I was doing Community Chest, and I worked a couple of times on Radcliffe house tours, which was fun.

Then as a faculty wife I was asked to join what was known as the Worms Book Club. The Worms was a really lively group. We met evenings. It was a real honor to be asked to join that group. Members included Muriel Pickering, whose husband was head of JPL [Jet Propulsion Laboratory]; Elizabeth Swift, whose husband was chairman of the chemistry department; Jean Bacher, biology; Peggy Davies, and so on. Anyway, it was a great source of pleasure.

Swent: What did you do?

Campbell: We bought books and circulated them. I was on the book selection committee for several years. Then we had meetings once a month and had speakers. One of us would take the meeting.

Swent: Did you review the books?

Campbell: No, we didn't review the books. We chose just anything we wanted to talk about. It was always fun.

I gave a couple of classes at NOTS; one in letter writing and one for the new junior professionals who were coming in to be on the staff. This was for the whole Pasadena Annex, not just for my own branch.

In 1960 something occurred that was very embarrassing to me. One of the top officers in the navy--he was head of security--asked if he could have an appointment. He scared me, because I thought surely I had had a security violation. He came and said that the Civil Service Commission in Los Angeles was having a



Dr. Catherine C. Campbell
Miss Federal Employee, 1960

Campbell: contest for Miss Federal Employee and they all wanted me to be the person to represent NOTS. I said, "I couldn't possibly do such a thing." Then my boss came--he was a civilian, a Cal Tech graduate--and he practically forced me into it.

So I competed against 27,500 employees in the Los Angeles area. That's what they said. It was a dreadful situation. I had to make a little speech too--they had a meeting in one of the hotels downtown in Los Angeles--a lunch meeting. All the top brass of all the federal agencies in southern California came. It was a dreadful thing.

Swent: [laughs] Why, I think it's a great honor.

Campbell: It was an honor, of course.

Swent: Did Ian tease you?

Campbell: Yes, of course he did.

Swent: What did he say about it?

Campbell: He was in San Francisco, thank goodness. But the most embarrassing was that a reporter from the Star News in Pasadena came and took a picture of me. They printed a large picture in the newspaper. Benno Gutenberg died that day, and his picture was a small one on the same page. And he was such a very important man. It was just dreadful.

I guess that pretty much takes care of my contributions.

Swent: You were certainly a very busy woman.

Campbell: A very busy woman, I really was, and had a lot of responsibility.

Swent: Let me just ask a bit more about your role as faculty wife; were many of these other women working full time also?

Campbell: I think I was one of the few. Eleanor Huse worked at Vroman's Bookstore, Peggy Davies taught at Scripps College. I don't think many were working.

Swent: Were you given guidance or strong hints by Mrs. Buwalda or Mrs. Stock about the sorts of community activities that were appropriate for you to be doing?

Campbell: Oh, no. Mrs. Buwalda did all kinds of good works.

Swent: She set an example, then, but she didn't pressure you?

Campbell: She didn't pressure me.

Swent: I was just wondering how you carved out your little--

Campbell: --my little niche?

Swent: Yes.

Campbell: Well, it was pretty much on my own.

I've already talked about the petrology parties and the Ph.D. parties and the wassails and the fireside parties so those just continued all during this period.

Swent: Did you do anything with the Boy Scouts also?

Campbell: No, I did things with Camp Fire Girls—I took them on trips. I should have mentioned that, I'd forgotten about Camp Fire. I took them on nature walks. That was before the war.

Joint Activities

Campbell: In 1948 Ian decided to go to the International Geological Congress in London. Dugald and Ian and I drove across the country--had a perfectly beautiful trip. This was just after the war and we had gasoline, and we could go places, but Ian didn't feel that I should go to London. It was still hard to get around, and also food was tight in Britain.

Swent: We forget about that.

Campbell: Yes.

Swent: They had a terrible time.

Campbell: Yes. But we all drove across the country and stopped and camped out at various national parks, and finally got to New York.

Swent: What did camping involve at that time? You had sleeping bags, tents?

Campbell: We had three little pup tents. We would just jump out of the car, and each one would put up his or her little tent. We had a Coleman stove. We had a little ice box—an insulated box—that we kept our food in. We lived very comfortably.

Swent: Things were a lot heavier in those days.

Campbell: Oh yes! Our sleeping bags were great big things.

Swent: Yes. You couldn't get all these nice freeze-dried foods and so on.

Campbell: That's right.

Then we got to New York. There I practically fell apart, because I was thinking of the trip back without Ian. We said good-bye to Ian and he and Mary Flower Russell boarded the ship for England. Dana Russell had been working in San Diego with Ian and he was going to the IGC too. So we met the Russells in New York. Dana was not going on the ship, he was flying. Ian and Mary Flower had a very pleasant trip across by ship.

Swent: Did you still have family in New York?

Campbell: No, my uncle was not alive then.

Swent: This was the first time Ian had been back to London since he was eight or so?

Campbell: That's exactly right.

Swent: Did he still have anyone there?

Campbell: Oh, all kinds of relatives. Many first cousins still alive in 1948. He stayed over there until the second of October.

Then Dugald and I went on by ourselves. We went first to Philadelphia and then we went into Maine. We camped all along the way in national parks and had a great time. We went across the northern part of the country and picked up Jean Sharp in Aurora, Minnesota. She was there visiting her family. She went on with us, because she was going back to Cal Tech. It was very helpful to have another driver.

Swent: Dugald was not old enough yet to drive?

Campbell: Not old enough yet.

We got back the third of September. We had a terribly hot ending to the trip as we came through Las Vegas. Early in September it's still awfully hot there. Anyway, it was good to get home.

Swent: Did you still have cats at that time?

Campbell: Yes. We had friends house-sitting for the summer. Yes, we still had the cats.

Swent: Domestic details I wonder about. [laughs]

Campbell: Oh, I have the cats next on my list here. [laughs]

We got really shaken up by the Tehachapi earthquake. I had a visitor then--one of my Mt. Holyoke friends, Marian Hayes, my roommate at Cambridge--was visiting and she was really scared by that earthquake.

Swent: When was that?

Campbell: It was the twenty-first of December, 1952.

We had lots of dinner parties. The Engels had come now, the Lowenstams, the Harrison Browns, and of course always and forever the graduate students who were coming in and out.

And as you say we had the cats at that time. In those days there was grey cat fur everywhere. Our furniture was planned around the cats--all greys and blues.

##

Campbell: In 1952 Ian and I both went to Boston for the Geological Society of America meetings. We left Dugald with a junior college girl who was living with us at that time, and it worked out all right. We had a wonderful reunion with friends at Cambridge. It was the first GSA I'd been to in a good many years.

Now we had Dugald working at Lake Edison in 1953. This was a summer job, working for Bechtel.

Swent: What about the cherry picking?

Campbell: The cherry picking? By this time I think they'd sold the orchard--he and Flora--because they just couldn't keep on with a rented arrangement.

Swent: Dugald didn't get in on that?

Campbell: No, Dugald didn't get involved in that.



Dugald and Catherine C. Campbell
1985

Campbell: In 1954 one of my friends was at the TWA office and saw a folder that had the Campbell tartan on it. She picked up that Campbell tartan folder and brought it to me at the office. I took it home and Ian and I looked at it and Ian said, "Let's go." TWA was having a flight for the Clan Campbell. They had a little Ford car--a convertible--with a Campbell tartan top. They had a Campbell piloting the plane, and they were making a big deal out of this.

Turned out not to be a big deal at all. It wasn't well publicized, there were only ten of us who signed up for it. So we had one big limousine and the Campbell tartan car. We flew to London--all Campbells one way or another. We took the night train to Edinburgh, then visited the Inveraray Castle of course--the home of the Duke of Argyll. Ian looked up cousins and cousins and cousins. It was really extremely interesting for me because these were all first cousins I had heard about and never seen.

There were two in London; the husband of one had been knighted, and he and his wife invited us to their apartment, which was a perfectly gorgeous place. Another one lived in Kew Gardens.

Then we went to Campbeltown and met two other first cousins and the daughter of one of them--Ailsa McEwan--who wanted to come to the United States.

Then we visited another cousin just outside of Bath who drove us around to see the beautiful gardens.

Everybody turned out for Ian saying, "How long is it since you've been home?" I thought, "What does that mean?" [laughs] Of course it meant since 1948 when he had been there before.

Swent: Did he get up to Campbeltown in 1948?

Campbell: Oh yes, he got up to Campbeltown also. The cousins really were wonderful and awfully nice to me.

We went to Elgin. One of the cousins had a big estate at Elgin called Lesmurdy. I remember getting a letter from Ian when he was there in '48 written in front of the fire in his bedroom. He said he had on a sweater and two jackets, and he was still half frozen. [laughs]

Swent: That was in the middle of July I suppose?

Campbell: Yes. But that's the way it is in Scotland. That TWA trip was really great fun.

Swent: It must have been.

Campbell: I wanted to say one more thing about GSA in Los Angeles in 1954 in November. Ian was program chairman, and I sat at the head table for the first time. That was a big thrill for me. Ian had a bagpiper lead the procession to the head table.

Then in 1955 Ailsa McEwan arrived. She was the daughter of the Campbeltown cousin. We sponsored her, and she stayed with us for quite a while. Ian got her a job at Cal Tech in the admissions office. Of course the young graduate students were attracted, and it wasn't long before she was engaged, and we had a big engagement party. Then her mother came over from Campbeltown and stayed with us. We had a big wedding in our back yard, and we had bagpipers.

Nick Donnelly was the man she married. His uncle was a bagpiper, and Don McIntyre, a geologist from Pomona, was a bagpiper. The two men marched up and down on the badminton court in the back yard. It was a very gay affair. [laughs]

Swent: It must have been fun for you.

Campbell: Yes, it was really fun.

Then we went to the International Geological Congress in Mexico in 1956. It was not a very well run congress. The poor Mexicans, they tried their best but everything was mañana.

Swent: Mexico City?

Campbell: Mexico City was the main meeting place. We went on a field trip to Paricutin. That was the new volcano. It was interesting to see only the church steeple sticking up through the lava.

In 1957 we bought five acres in Lucerne Valley as jackrabbit homesteaders--we paid twenty-five dollars for five acres. The Bureau of Land Management was opening up one square-mile section.

Swent: Jackrabbit homesteaders, I haven't heard that expression.

Campbell: I don't know where the name came from. That's what they're called.

Then we had a cabin built out there, where we spent a lot of weekends. It was just an hour or so from Pasadena. There was a great problem when we moved to San Francisco as to whether we would want to continue to hold on to our cabin or not. We decided we would. We added a bedroom. We moved the furniture from Dugald's room out to Lucerne when we sold the house in Pasadena.

Swent: As homesteaders, did you have to--

Campbell: We had to prove up on the land, yes. We had to build a house within a certain number of months. First put in a slab, and then build a house. We've really enjoyed it a lot. I usually fly down to Ontario now, then rent a car and drive over.

In September of 1957, we were invited to Linda Pauling's wedding. She married Barclay Kamb. It was a very nice affair at the Linus Paulings' house in Altadena.

Swent: Was this Linus Pauling's daughter?

Campbell: Linus Pauling's daughter, yes. Barclay was the one who was with Ian at field camp, in New Mexico.

Swent: So, that was a nice wedding, but no bagpipes?

Campbell: No bagpipes there.

In September of 1958, we had a dinner party for John and Betty Gustafson and Louis Gustafson, their son, who went to Cal Tech for a year or so. It was fun to renew that connection after many years--we knew John at Harvard.

Swent: Had you known Betty?

Campbell: No, they weren't married when John was in graduate school.

Swent: What about Linus Pauling? Where was he at that time?

Campbell: He was chairman of the department of chemistry and very much in evidence at Cal Tech.

Swent: Was he interested in vitamin C yet?

Campbell: No, I don't think so. That was later. [laughs]

I went on a trip to Washington with Ian. I was on navy business, and he was at an American Association of University Professors meeting. At that time we visited the Virginia Campbells--Hugh Campbell, who was the first of the clan to come over to this country, married a Virginian, and his descendants are still in Virginia. We visited his grandson, Archibald Algernon Campbell.

Campbell: In 1960 we went to the International Geological Congress in Copenhagen. We had a marvelous pre-congress trip on the good ship Gann. All kinds of wonderful geology friends were on the ship. We were on the top deck I think because Ian was president of the American Geologic Institute that year. The top deck seemed to be for very special people, and we were very impressed. People like the Buddingtons, and the Gillsons, and the Campbells were on the top deck and others were down below. People like the Fooses, and the Waldos.

That was a great trip on the Gann. Whenever we get together with other of our friends who were on that ship we always reminisce with great joy.

The meetings were in Copenhagen. Then we went on a post-congress trip led by Count von Eckermann. This was in Sweden. This was all the way up the coast of Sweden. A great trip!

This coffee table and that couch came from Sweden, and the sideboard came from Sweden. We took this trip just as we were getting ready to move to San Francisco. We knew our room dimensions and what we needed. Our decorator told us exactly what to look for. So that was a good chance to get some furniture.

Swent: I had thought your other furniture was Danish; it's what we call Danish modern.

Campbell: Yes, that's right.

Swent: Did you get these other things from Denmark also?

Campbell: The other furniture we got here, yes.

Swent: And then you filled in with Swedish.

Campbell: That's right.

Swent: So at this time you knew that you had your apartment in San Francisco.

Campbell: Yes.

Swent: So there was a period when you were still living in Pasadena, but Ian was up here?

Campbell: That's right. Ian drew a half-mile-radius circle from the Ferry Building and said he wanted to live within this walking distance of his office. I found an apartment right across the street from where we are now, which was very convenient and easy, and Ian could walk back and forth to the Ferry Building. At that time, this area was a parking lot, and we saw it grow into a high-rise apartment building as the time passed. We were one of the very first to choose an apartment and pay our first installment. For a two-and-a-half-year period, Ian was here and I was in Pasadena working for the navy.

Swent: And you were watching this building rise?

Campbell: Watching this building go up, yes. I came up almost every weekend. The navy had a shuttle bus that went over to the Los Angeles airport in the evening and came back in the morning. People were going back and forth from Inyokern to Pasadena all the time. I would just hop on that shuttle bus and go over to the airport on Friday afternoon, and Ian would meet me here, and we'd have the weekend together. Then on Monday mornings I would get up at the crack of dawn and catch the eight o'clock plane south.

Swent: You were kind of ahead of your time, weren't you? Not a lot of people were doing that much commuting.

Campbell: No. I had my 100,000 miles before I knew it. United Airlines had a "Red Carpet" award and after 100,000 miles you got a plaque.

Swent: To add to being Miss Federal Employee.

Campbell: Yes. [laughs]

Swent: That's wonderful. [laughs]

Campbell: But those were good years. We would both work hard during the week, and then we'd just relax and have a wonderful weekend together. We'd go up to Mt. Tamalpais and hike around the mountains and have a picnic most every Sunday. A beautiful area!

Swent: I was just thinking probably not many people would think that this apartment is within easy walking distance to the Ferry Building.

Campbell: No, a lot of people wouldn't. [laughs]

Swent: Easy walking distance to a geologist is a little different from what it is to some other people who work down in that part of town.

Campbell: That's right. Straight up at the end of the day. Too bad it had to be that way--uphill instead of downhill.

Swent: It was good for him.

Campbell: Oh yes.

Swent: In 1960 you were shopping for your furniture, but he had already moved up here?

Campbell: Yes, but it was just a little furnished apartment. Yes, he moved in '59.

Swent: Okay. Do you want to say anything about that decision and how the opportunity came and so on? He had to apply for the job, didn't he?

Campbell: There was an advertisement of course that went out nationwide for applicants for the head of the California Division of Mines. Dick Jahns persuaded Ian to put his name on the list. Olaf Jenkins had been head.

So Ian took the exam. He was in the field when he took the exam. I think it was Chewelah. Then he had an interview with the mining board. Phil Bradley was chairman of the board. The board made the decision. Ian said it was a very easy, pleasant interview. Then he was offered the job, and the decision had to be made. He was pretty sure he wanted to go.

Swent: How long had he been at Cal Tech?

Campbell: Since 1931.

Swent: Almost thirty years.

Campbell: Yes, more than twenty-five. It was time to move. I think Ian was getting stale. And he was very much bothered by the smog. It was depressing to be in that smoggy atmosphere all the time. He found it so. So he came and I came in January of 1959. I stayed here for ten days, found the apartment, and he started work at the Ferry Building. He was on leave from Cal Tech for the first year which was very nice of them.

Swent: He could have changed his mind.

Campbell: So he could have changed his mind. Later on they made him a professor emeritus after he had decided to stay here.

Swent: Did he continue to go back there for lectures?

Campbell: No.

Swent: What does the emeritus designation involve? It's an honor, I know, but it didn't have any responsibilities?

Campbell: No, no responsibilities. When you retire or resign you become emeritus if the university confers the title. I'm still on their lists. I'm always invited to the graduation and to receptions and whatnot.

Swent: You were a little more reluctant to leave Pasadena than he was?

Campbell: Yes, of course I was going strong in my job and loved it.

The Fabulous 1960s in San Francisco

Campbell: When I came up here, I just paced the floor without a job. I went down to Fort Mason and talked to the people there, and I went to the Civil Service Commission and talked to people there to see if there were any jobs anywhere around. Then one day in June we went to a birthday party in Palo Alto for Foster Hewett who was a very good friend of ours. There we met Bob Wallace who was a USGS man--one of Ian's favorite graduate students at Cal Tech. Bob said, "Kitty, we've just been waiting for you to come up here. We need an editor. Would you like to come and have an interview?" and I said, "Yes, I'll come tomorrow." [laughs]

Swent: You had stopped the other job by then?

Campbell: Oh yes.

Swent: You just couldn't continue the commuting forever?

Campbell: And we had sold the Pasadena house. So I went down to the Survey and had an interview. I was still on the rolls at the Naval Ordnance Test Station, so I had no break in federal service, which worked out very well for me. So then I started work at Menlo Park.

[Interview 4: June 13, 1988] ##

Swent: When we stopped, you had just gone to a party and had talked to somebody from the USGS--

Campbell: --Bob Wallace--

Swent: Yes, who said they were waiting for you.

Campbell: Right. [laughs]

Swent: Was this the first that you were aware that they were--

Campbell: --first that I was aware. I practically fell on Bob's neck.

Swent: Had you had USGS in your mind?

Campbell: Oh no. It was far beyond my highest expectations to ever work in such an exalted place. I was tremendously impressed and very excited.

Swent: You had known these people, however?

Campbell: Through Cal Tech, yes, and through Ian. I had many friends there to start with, which was very helpful.

Swent: I noticed you were hired as a geologist.

Campbell: I wasn't actually. They realized that I hadn't been in geology for a good many years while I was working for the navy, so they hired me as a technical editor, but very shortly I was changed to the category of geologist. It was only a matter of months until I got back into my proper category. That was good.

Today I thought we would talk about the fabulous sixties. As far as I'm concerned that decade was the most productive, the happiest, and the best of our lives. I'm not sure Ian would agree with me on that, but I think he would. He might have thought that some of the Cal Tech decades were better, but this was a very exciting decade for us both.

Ian's Activities

Campbell: First and foremost Ian's attention was given to the California Division of Mines, which was his main job. When he retired from that position they had a skit at his retirement party calling him "the man of many hats." I thought I would try to carry that idea through, as I talk about these ten years at the Division of Mines.

His main hat of course was chief of the division. He was a very different chief from his predecessor--Olaf Jenkins. He was very democratic in his leadership. He went to all the coffee breaks, and he listened, and he talked. He expected the men to do their jobs. He didn't breathe down their necks. He expected them to do professional work, and they did professional work. It raised the morale and made the division a pleasanter place to work than they had been accustomed to.

One of the men who had been at the division for many years--Salem Rice--wrote me a note at the time of his retirement. Salem said that he'd worked under seven division chiefs, and there was no question that Ian was far and away the best. I mentioned that to Gordon Oakeshott, and he said he would agree with that evaluation.

Gordon said in an article that he wrote at the time of Ian's death that the reputation of the division was tremendously enhanced just by having Ian Campbell as the chief.

Swent: Do you attribute this just to his management style?

Campbell: I think his management style and his relationship with the professionals in the group. Then of course his reputation from past years.

Swent: Was he also perhaps a better geologist?

Campbell: No, I don't think so.

Swent: I would guess that some of the skills that come into play in being a good teacher might also make him a better chief.

Campbell: Yes, I think that would be a carry-over from the Cal Tech days. During the first year he was chief of the division he had his first job as president of one of the national societies. This was the American Geological Institute [AGI]. It was a very critical period in the life of AGI. No one was sure whether it was going to fold or was going to be a viable society. AGI is a strange organization in that it's made up of societies, not of individuals. It's a sort of an umbrella society under which

Campbell: AAPG, AIME, GSA, MSA and any number of others are working.
[American Society of Petroleum Geologists; American Institute of Mining, Metallurgical and Petroleum Engineers; Geological Society of America; Mineralogical Society of America]

Swent: The AIME also belongs to the AGI?

Campbell: Yes.

Gordon Atwater, who was high up in AAPG ranks, followed Ian as president of AGI. The two of them really worked terribly hard to keep the institute afloat, and they managed to do it. AAPG was threatening to pull out, and it was the largest of the societies that were in AGI. If AAPG had pulled out, AGI probably would have floundered. Anyway, they managed, but it was touch and go for a while.

In 1962 the AIME awarded Ian the Hardinge Medal "for being an eminent scientist, author, educator, and administrator and for his personal warmth, outstanding leadership, and devoted service to the profession." He was very pleased with that award. But something that most people don't realize was that he didn't receive it at the dinner, because he refused to put on white tie and tails. At the head table in those days back in 1962, all the men at the head table wore white tie and tails. He never dressed up to that extent and he wouldn't wear anything more formal than a tuxedo. They wouldn't have him at the head table so dressed. I don't know what happened, because I wasn't there, but anyway he came home carrying the award.

Swent: But they didn't award it to him at the dinner?

Campbell: But they didn't award it at the dinner.

Swent: He was in illustrious company there; wasn't it Albert Schweitzer who wouldn't wear tails for the Nobel Prize?

Campbell: I've forgotten about that.

Swent: And there was some consternation about that, because he was supposed to be more dressed up, but he wouldn't do it.

Campbell: Ian hated to be dressed up.

Almost immediately after he was made chief, he went to a meeting at the American Association of State Geologists [AASG], and they put him to work as editor of their bulletin, so that was the next hat he had to wear.

Campbell: Ian felt it was important to go to society meetings. He felt that he gave to them, and they gave to him. He went to many national meetings--my diary is full of notes about taking Ian to the airport and meeting him--to New York, to Salt Lake City, to New Orleans, to Washington. He was much "on the go."

About this time, which was fairly early in his decade with the division, he decided that the name of the division was not really correct. It shouldn't be restricted to mines, so he put through the change to Division of Mines and Geology. He also was called state geologist instead of state mineralogist. There hadn't been a state geologist since J. D. Whitney in 1874, and this was a much better name for the head of the division.

Swent: What was the significance of these name changes?

Campbell: Just to broaden the scope. State mineralogist certainly didn't describe the position, because it included far more than mineralogy, and Ian broadened its scope even more. He included more geochemistry, more geophysics, work in urban situations to try to decrease hazards such as earthquake hazards and landslide hazards. He felt that the word geology should be included in the name of both the division itself and the person who was its head.

Swent: This also then forced the advisory board to change its title. It became the California Mining and Geology Board.

Campbell: Mining and Geology Board, that's right. You probably learned that from Phil Bradley.

You remember when I was talking about Cal Tech years when Ian was working in Chewelah for the Geological Survey on the magnesite deposits? In 1962 I see in my diary that I was reading proof with Ian on the Chewelah report. That must have been about twenty years later.

Swent: They're finally writing the report.

Campbell: Finally got it into print. [chuckles]

In 1962, the AAPG national meeting was held in San Francisco for the first time, and Gordon Oakeshott was general chairman. He did a beautiful job. We had a busy, busy time here at the apartment with committee meetings of AGI and committee meetings of AASG. Just a wild time. People coming and going.

Another hat Ian wore was that of the president of the LeConte Club. The LeConte Club was made up of geologists in the Bay Area. It met about twice a year. They met in the afternoon about two o'clock and had two or three talks in the afternoon.

Campbell: then dinner, and then an evening talk. So it was quite a session. The ladies had tea in the afternoon while the men were having their talks.

Swent: Did this include you? You were also having tea?

Campbell: I was having tea when they met here. [laughs]

Swent: You weren't supposed to listen to their talk?

Campbell: No, I wasn't supposed to be interested.

It was similar in a way to the Branner Club of southern California that I have already talked about, but this was the northern California group. As far as I know there've only been two men who have been president both of the Branner Club and the LeConte Club. One was Mason Hill, and the other was Ian.

Swent: Is this an old club?

Campbell: It's no longer in existence, it's defunct now.

Swent: But it was not something that Ian organized?

Campbell: Oh no, it had been in existence a long time. There are just too many organizations now. It just died a natural death. I can't remember what year.

Another presidency about this time was the Mineralogical Society of America. This was another national organization and a very prestigious one.

Ian put on yet another hat when the California Academy of Sciences asked him to be on their board of trustees in about 1960. In 1963 he was asked to be on their science council which was the subcommittee, or part of the board of trustees, that was particularly interested in the scientific programs of the academy. Ian was much involved in academy affairs until his death. He served on the board of trustees for sixteen years. For four years he was president of the academy.

In 1964 there was a great to-do over whether the Division of Mines and Geology should continue to exist, whether it should be abolished, whether it should be enlarged, or what should happen to it.

Swent: Who was the governor then?

Campbell: I think it was Pat [Edmund G.] Brown. I'm not sure. So it was a matter of life or death for the division, and Ian really put his shoulder to the wheel.

Swent: I was wondering where the threat came from. Was it from the governor, from the legislature--?

Campbell: From the legislature, yes, on budget problems. Ian got people from the USGS to come and testify about the value of the state division. He was fighting for the life of the division. We had Parke Snavely, Don Ross, John Albers, and Jack McGill testifying. Parke Snavely was one of the senior USGS men, and I remember Parke's saying that he felt as though he were a seal act following a striptease, because he followed Ian who had given such an outstanding presentation. [laughs] They all came to the apartment for drinks after the hearing, so I got some insight as to what was going on--what the excitement was.

Swent: The hearing was here in San Francisco?

Campbell: The hearing was here in San Francisco, yes. I know that because, for two or three nights, they would come here and have a drink and go over the day's events.

Swent: And they fended it off.

Campbell: They fended it off successfully. I think the budget was increased rather than decreased.

Swent: It's interesting that the Survey also supported the division; you might think that they would be in competition.

Campbell: No, they have cooperated.

Then we had our big blow. In 1965 when Ian went for a regular physical examination, he was found to have cancer. Then he had to go through cobalt radiation for five weeks, five days a week, back and forth to the Palo Alto clinic. He did that himself; I was not involved. Then he gradually pulled back. He was just skin and bones for a while, but he gradually pulled back and had kind of a remission for thirteen years, so we were thankful for that.

In 1965 we had an American Association of State Geologists [AASG] meeting in San Francisco, and that meant a lot of extra work. It went off very well. I had the ladies here for tea and Ian asked one of his favorite professors from Cal Tech to come and give the evening talk--Rodman Paul--talking on gold which was very good.

Swent: Rodman Paul, the historian?

Campbell: Yes, the historian.

Swent: He was on our first advisory board for this project.

Campbell: Oh really?

Swent: He was very enthusiastic about this project.

Campbell: That's interesting.

Swent: Unfortunately he died not too long ago.

Campbell: Yes, I know.

Swent: He sent a hand-written note just a matter of weeks before he died encouraging me to continue with this project because he said it was so worthwhile.

Campbell: Oh, that's very nice.

Swent: And I never met him.

Campbell: Oh, too bad. He was a delightful person.

Swent: I've read his books and I was hoping to meet him but I didn't get a chance.

Campbell: Yes, we had an awfully nice time with him.

Swent: I'm glad to know that you were friends.

Campbell: Yes.

Ian was made an honorary member of the Pacific Mineral Society and was given their Distinguished Achievement award by the American Federation of Mineralogical Societies. This was an interesting award because it involved a scholarship that the federation gave to a university of Ian's choice. I think he chose the University of Oregon, but I'm not sure.

Swent: You mean they gave a scholarship in his name?

Campbell: In his name, yes.

Swent: What a nice thing.

Campbell: Yes, I thought that was a nice thing too. And he chose the school.

Another hat—he was on the State Institute of Marine Resources, which was a state appointment. It took him quite a number of times to La Jolla and Scripps Institute. He seemed to be traveling quite a bit for that organization.



Ian Campbell, 1970

Campbell: In 1966 he went to Eugene, Oregon, for the fiftieth reunion of the World War I Ambulance Corps. They had a very good reunion.

One evening I came back from Menlo Park to find Ian all set up with martinis. We never had martinis during the week before dinner, so I knew something exciting had happened. He had just heard that he had been made vice president elect of GSA [Geological Society of America]. It just about blew my mind. It was a greater honor than anything I had ever dreamed of. It meant he would be president of GSA in two years' time!

In 1966 Ian was elected president of the American Association of State Geologists. I went with him on this occasion to Bloomington, Indiana, where the state geologists were meeting that year.

Again another big excitement. DeWitt "Swede" Nelson, who was head of the Department of Conservation, called and said would Ian please meet him at the airport. Swede was changing planes in San Francisco, and he wanted very much to have a meeting with Ian. Ian wasn't very keen about going, because he had a bad cold, but Swede said this was terribly important. So Ian drove down to SFO. Swede said he was leaving, and he wanted Ian to be director of the Department of Conservation. Ian was not pleased with the idea.

Swent: This was for the State of California?

Campbell: This was the state.

But Swede said that it would just be until the new governor was elected. It was very important for Swede, because he had been offered a professorship at the University of Iowa, which he very much wanted to accept. He felt he couldn't go unless Ian would take the director's job. He said there was nobody else who could handle it. So Ian said he would. On the first of September, 1966, we went to Sacramento, and again I had the job of finding a place for him to live. I found an apartment that was close by, so he could walk back and forth. Then we were back again to commuting weekends. This time Ian was the commuter instead of me. For the next six months he was "The Honorable" Ian Campbell. I don't know when that happens, how far up you have to go to become "Honorable." Anyway for six months he had that title.

Ian was also on the Committee for Surface Mining. He had been very much interested all through his career in sand and gravel. He felt that the heavy metals got too much attention--gold and silver, lead and zinc, etc. Whereas sand and gravel didn't get as much attention, and sand and gravel were so important really, because our whole civilization is based on the

Campbell: use of sand and gravel for our buildings, and for our roads, etc. So he was anxious to have a good Surface Mining Commission. He asked Horace Gilbert, an economist from Cal Tech, to be on that committee, and I know Lewis Huelsdonk was on it too and Don Reining. It was quite an active committee--another hat that Ian wore.

Years back, there had been a Committee on Geographic Names in the state but it had been defunct a long while. The state just adopted whatever was decided by the federal board. But Ian felt that it was important to have some input from the state, so that committee was revived and Ian was made chairman.

Swent: What did they do?

Campbell: They proposed names, and they reviewed names that had been proposed. There was a great to-do about names that were derogatory, such as Nigger Buttes for example. Such names were all carefully screened and changed. If somebody proposed a name for a mountain or a river or whatnot, it would come through the Board of Geographic Names and there would have to be careful documentation as to why it was appropriate, where it was located, and whatnot.

Swent: Of course avoiding duplication.

Campbell: Avoiding duplication, yes.

Swent: Did they name the faults?

Campbell: No, that was not geographic. It was just place names, not geologic names.

So that pretty much carries through the various activities that Ian had during that decade.

Swent: How much political activity was he involved in?

##

Campbell: Not too much as I remember. He was back and forth to Sacramento some, but usually it was once a year for budget hearings and more often for the directors' meetings.

Swent: After this fight to save the division did he have to keep contact with the legislators?

Campbell: No, it was just the once.

Swent: It all died down?

Campbell: It died down, because the decision was made that the division was important for the state.

I haven't said anything about the GSA. Of course, the high spot of this decade for Ian was his presidency of GSA.

Swent: That would be the most prestigious of these organizations?

Campbell: The most prestigious, yes.

And the annual meeting at which he was president was in Mexico City which was a rather exciting and interesting place. It was the first time it had ever been in Mexico.

Swent: What year was this?

Campbell: It was 1968. During the year Ian had to go to all the section meetings--the Southeast Section, and the Northeast Section, the Central Section, the Rocky Mountain Section, and the Cordilleran Section--so he was really on the run. He had to talk at each one, but it wasn't a difficult talk, it was just the "state-of-the-union" kind of thing. He stood up very well during the annual meeting, although he was pretty well bushed.

Swent: Did you go?

Campbell: Oh indeed yes. I think I'll speak about that when I talk about our joint activities.

He was on other commissions too, although I've mentioned a lot of hats already. He was on the State Geothermal Resources Board, on the International Union of Geological Sciences Committee. He was on the American Commission on Stratigraphic Nomenclature, and there were many others I'm sure. He was just in great demand and, as Gordon said, he always made real contributions. He wasn't just passing by. He gave of himself, and he gave help in depth to all the many organizations that he belonged to.

Swent: What was he doing to continue his own education at this time? How did he keep aware of developments?

Campbell: This was one reason why he went to meetings. He listened to papers, talked to people in the halls, and learned what was going on in the field.

Swent: At the meetings?

Campbell: At the meetings.

Swent: And not only at the sessions but in the halls?

Campbell: Yes, both.

Swent: Were there publications also?

Campbell: That he prepared?

Swent: Yes.

Campbell: Oh yes. It was mostly on sand and gravel--industrial minerals--that he gave talks. Also on the position of the state geological surveys in the whole geological picture as related to, for example, the GSA and the USGS.

At his retirement party in 1969 at the end of the decade people from all over the state came to wish him well. And so ended the Campbell decade of the Division of Mines and Geology.

Catherine's Activities

Campbell: Now we turn to what I was doing, while Ian was doing all this.

I said good-bye to 405 South Bonnie in Pasadena and hello to 1333 Jones at the end of June in 1961. As I have already mentioned, I was able to get a job at the U.S. Geological Survey as technical editor before my time ran out at the U.S. Naval Ordnance Test Station; I had no break in my federal service, which saved a lot of hassle.

Of course I already knew many people at the USGS through Cal Tech and through Ian, and it was just the greatest joy in the world to be there, because it brought my two areas of knowledge together, and I felt I was where I belonged at last, with the geology on one hand and the technical editing on the other.

My first job was to edit a monster of a report, a 400-page tome by Irving Witkind on the Abajo Mountains in Utah. It had been sitting on the back of somebody's desk for years, and eventually found its way onto my desk, and I went to work on it. [laughs] The contrast with the navy job was just unbelievable. [laughs] It was hard to adjust.

Swent: In what way?

Campbell: Everything at the navy was deadline, deadline. Quarterly reports, semiannual reports, significant new items, all had to be out within a month or within a few weeks or within a few days. In the Survey it was a matter of years.

Campbell: I made friends very shortly with a wonderful woman who was head of the illustration section--Esther MacDermatt. She calmed me down and tried to keep me from getting too anxious about moving things through and getting them out. After all geology didn't change, and it didn't really matter whether a report came out tomorrow or a year hence.

My first phone call to Washington was an interesting one. The last call that I had made from the Naval Ordnance Test Station was about how many operational manuals were needed for a given destroyer. I had to get in touch with Minneapolis-Honeywell, the prime contractor, to get this arranged. My first phone call from the Survey was whether to spell "greywacke" with an initial cap or lower case. I know now that this was an important matter for the Geologic Names Committee, but in my ignorance, I thought it funny at the time.

Fairly early in my time at the Survey I met Frank Calkins. Bob Wallace introduced us. Bob was sort of my mentor. Frank Calkins was probably the greatest editor the Survey ever had. He was well into his eighties when I met him and he lived to be well into his nineties. He became a great friend and I learned a lot from him.

He used to edit reports and then write an epistle about his thoughts on how to improve it and what to change. He made what he called Calkmarks in the margin that would illustrate a point. For example, if a sentence went on and on and on with a lot of prepositional phrases he would make wave marks that trailed off in the margin. Then he might say, "sink ships," he would draw a sinking ship in the margin--a tiny little drawing. Don't use relationship, just relation. Then, he might write "shun tion." Those are the three Calkmarks that I remember.

It makes me think at this time that I should talk about the bus. I never could have taken this job in the first place if it hadn't been for the wonderful commute bus that goes back and forth every day. It still does and I will be taking it tomorrow morning when I go down to the Survey. It's changed hands many times, but it's been going back and forth ever since about 1959 when the Survey first moved to Menlo Park. Its riders are from Sunset, from Stanford, from Stanford Research Institute, and from the Survey. It has just been a godsend, that bus.

Swent: You mean Sunset magazine?

Campbell: Sunset magazine, yes, because these places are all at Menlo Park and Palo Alto. I get off at the first stop, and Sunset people get off there too.

Swent: You said, "When the Survey first moved down;" where had the Survey been before?

Campbell: Just in Washington; then they moved an office out to San Francisco. It was housed in the Old Mint Building. Then they bought the Menlo Park "campus" and built three buildings. I'm not exactly sure when they moved down there; I think it was in the late fifties.

Swent: So it was new when you started?

Campbell: Oh yes, it was very new when I started. There are still a few people around who worked at the Old Mint. My friend Esther MacDermatt started work at the Old Mint, but she has been dead many years.

It made me think of the bus when I was talking about Frank Calkins, because he used to bring me flowers on Friday afternoon to take home on the bus and have at home for the weekend. On Friday we had cocktails on the bus. It was a very congenial group.

Two of my best friends were bus friends. One, Dorothy Bailey, was a woman who worked at Saks Fifth Avenue. She hopped off the bus as it went through the Stanford shopping mall.

Swent: Who was the other one?

Campbell: The other one is a psychologist friend who worked at the Veterans Administration hospital. She's still my best friend in San Francisco.

Swent: Do you want to give her name?

Campbell: Helen Ammons. She has a Ph.D. in psychology. She goes with me to the desert.

I also went quite often to the Peninsula Geological Society meetings. This was a bit of a push because I would be working all day on Thursday with the Survey and then come home for dinner. Then we'd drive back down to Palo Alto to Stanford for Peninsula Geological Society meetings. Ian thought it was worthwhile, and I did too.

Swent: So he went with you?

Campbell: Yes, we would drive back down. I wouldn't have gone by myself.

In 1962 the first meeting of all the technical reports units in the Survey was held in Menlo Park. The head, who worked in Washington, was Mary Rabbitt. Douglas Kinney was the head map editor.

Campbell: Washington is where the national headquarters was. They have since moved to Reston, Virginia. We had three centers. Washington was the main one; then there were the two subsidiaries, one at Denver and one at Menlo Park. So we met with people from the two other groups, which was very worthwhile. We had great discussions over how we could improve our operation.

Swent: You all had to spell "greywacke" the same way.

Campbell: --with a capital or lower case, yes.

In March of 1962 Mary Lou Callas, who had been head of the reports text editing group, resigned. I was asked to take her place, and I moved into that position.

We were of course in the Geologic Division, and I liked that. In June 1962 I was asked to take the job as head of the editorial section of the Publications Division. The Survey has a Geologic Division, a Publications Division, a Water Resources Division, a Topographic Division, etc. Our technical reports unit was in the Geologic Division, and I felt that was the place I really belonged. They offered me a higher grade if I would take the job as head of text editing in the Publications Division, but I didn't think I really wanted the job. They would mark for the printer and would do another text edit. I felt it was not good organization, and I didn't want to be involved. It seemed to me it was duplication of effort. It has since been changed, thank goodness. But for a while we were spinning our wheels.

Also in 1962 we had a meeting of the Interlaboratory Committee on Editing and Publishing for the navy at the Rad Lab at Hunter's Point in San Francisco. They asked me to come and talk about the differences between the navy and the Geological Survey. They were absolutely incredulous when I told them of the different time frames with which we worked. [laughs]

Also the heads of our Technical Reports Units were geologists who had had no experience whatsoever in publication. They were just plucked out of their jobs, if they had come to the end of a project, and assigned to be heads of the reports groups. The people who were already there, such as myself and the head of the map editing unit, had to train the new chief and teach him what he was supposed to do. Then the chief got a raise in grade, but of course we did not. [laughs] That system is only now being changed.

We now have Jim Pinkerton, who has worked his way up in the unit. I hired him, as a matter of fact, and he has come up through the ranks and is now head of the Menlo Park Technical Reports Branch. He deserves it, and he's good. He knows the

Campbell: system and that's the way it should be, not bringing in someone who has had no experience in publication or in supervision either.

The navy people just couldn't believe what I was telling them.

Swent: Which system do you prefer, the navy system?

Campbell: The navy system is certainly far more efficient. The Survey seems to be following it now.

Another monster of a report that I worked on during these early years was by Charles Hunt on Death Valley. This was a well-written report; Charlie writes well, but he had no sense whatsoever about illustrations. He had taken hundreds of pictures and he'd turned most of them in to be incorporated in the report. I was helpless in knowing how to cope with this problem. So I got the branch chief and the assistant branch chief, and a map editor in TRU to sit down and select the pictures to be used.

Swent: TRU would be Technical Reports Unit?

Campbell: Yes.

Finally we whittled them down so that they were manageable, but it was a great to-do, and we spent days on it.

Swent: I think that's the report that I looked up in the library. I was very much interested in seeing that it includes a lot that I hadn't realized a geologic report covers.

Campbell: Right. A lot of ecology. It was most unusual.

Swent: Was it your decision or was it the writer's decision?

Campbell: Of course it was the writer's decision.

Swent: I see. You had nothing to do with such policy matters?

Campbell: No, I wasn't very pleased with the decision.

Swent: Why?

Campbell: Because I thought it was going out of our field so completely. But the director approved it, so that was that.

We went back and forth to Washington on various occasions for meetings of the TRUs, which I found to be very worth while.

Swent: Who were these professional papers written for at that time?

Campbell: For the general public, for people who were going to Death Valley, people who were going to Steamboat Springs, people who were going to the Navajo reservation, and whatnot. For geologists and for travelers, although not too much for travelers, because they are not really written for the layman.

Swent: It seems to me that there's been a definite change.

Campbell: There has been a definite change in recent years.

Swent: There was no attempt made to explain the Survey. Some of these more recent reports seem to have kind of a public relations aspect.

Campbell: Yes. Did you see the one on Yosemite? That's the latest one. It's beautiful.

Swent: No, I haven't seen that particular one but more recently there's quite a little glorification of the government agency itself which wasn't in those earlier ones.

Campbell: Yes.

The head of our Technical Reports Unit whom I worked with most and enjoyed most was Don Peterson. He had been one of Ian's students at Cal Tech, so I had known him for many years. We really worked hard to get the reports unit on its feet and working as a unit. We had meetings every week. I had a definite idea of how I thought the unit should be run--the way I had had my branch running in the navy. We just worked beautifully together, and had an awfully good time. Don's main work had been in Arizona and one of our suprising visitors was Erle Stanley Gardner who came to talk to Don about some background material for one of his books.

About this time Allen Cox and Dick Dole and Brent Dalrymple were working on remanant magnetism, and reports came through in droves. Cox, Dole, Dalrymple; Dalrymple, Cox, Dole--all possible combinations of the three names. They were all very interesting reports, because this was really at the forefront of knowledge when they discovered that there had been these tremendous reversals in the north and south poles. That was exciting.

Then on March 27, 1964, came the Alaska earthquake and that changed our lives considerably. Mary Rabbitt wanted to get out a circular right away, and this was just what I liked to do. I knew how to get a report out fast. Between March 27 and April 19 we put out a circular. On that last weekend we had four typists working, four proofreaders, two illustrators, and three authors.

Campbell: We worked until ten o'clock one night and were back again at eight the next morning. I carried the finished copy down to Belmont where Art Grantz picked it up on his way to the airport to fly to Washington. That was great fun.

Then of course as you know I was the head editor for the whole series of professional papers that came out afterwards on the earthquake. At that time I got to know Ed Eckel who was overall coordinator. He was from Denver, and he and I worked well together.

Swent: That was a series of six--

Campbell: --six I believe. That was a big job and one I really enjoyed.

Swent: How many years did that take?

Campbell: The last one came out in 1970.

Swent: 1970 from 1964.

Campbell: Seven years, yes. Not too bad as these things go.

About this time I was spending more time with Frank Calkins. He was working on the AGI glossary as an editor. He was in his nineties--or perhaps not quite. He had a cat called Winston, and most everybody at the Survey knew about Winston. Day after day I would hear Frank's footsteps coming toward my office at 4:15. He would come to tell me the doings of Winston [laughs] for the day. We got to be really good friends.

Another monster of a report was Tom Dibblee's "Western Mojave."

Swent: Yes, I've looked at that.

Campbell: That again was a tremendous problem for me because Tom, marvelous geologist as he is, had trouble writing. It was all telegraphic style. There had never been a professional paper written in telegraphic style before. I just couldn't see myself sitting down and making sentences out of these telegraphic remarks. So I wrote the chief geologist and asked if there could be an exception made for Tom. He said there could be, so the report went through that way. I think it was the right thing to do. It would never have got out otherwise. It had been sitting there for years, because nobody knew just what to do about it. I felt it should get out, and we made it.

Swent: Was this a style though that was understandable to readers?

Campbell: Oh yes.



United States Department of the Interior

GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

4 DEC 1970

Memorandum

To: Catherine C. Campbell
From: Director
Subject: Congratulations

I would like to add my compliments to those that Dr. Richard H. Jahns, President of the Geological Society of America, expressed in the attached letter for the great effort in completing the Alaskan earthquake series of Professional Papers. Each author, editor, and illustrator did a truly outstanding job, and to each--congratulations!

Director

Attachment

Swent: I looked at it, and I wasn't aware that there was any barrier there.

Campbell: No, you wouldn't, but it was different.

##

Campbell: We were looking for a new text editor in 1966. I had gone to the AASG meeting with Ian in Bloomington, Indiana, that spring, and met John Patton, who was head of the Indiana State Survey. I called John to see if he had any students graduating who might take the job. He suggested Kathleen Ridge and we hired her. It was an example of a good crossover from Ian's side of the family to my side. Kathy is still working for the Survey, not at Menlo Park but in Denver.

We also had what we called the "Campbell Express." If Ian had something to go down to the Survey he would bring it home at night, and I would take it down in the morning. If anybody had something to go back to the Division of Mines we would reverse the process.

Another monster of a report was the Lincoln County, Nevada, report. It was one that had been on the back of somebody's desk for years; it was a tremendous job. These Nevada county reports were sort of a headache because they were huge, all of them, and it was difficult working back and forth with Reno. But we got out three that I remember; Lincoln, Clark, and Esmeralda.

In 1967 Frank Calkins had his eighty-ninth birthday and we had a big party. A quartet sang. I wonder if I can remember how that song went.

"Frank Cathcart Calkins, past eighty-nine,
Gracefully aging like vintage wine.
Tell us, Frank Calkins, tell us the truth.
Where did you stake the fountain of youth?" [laughs]

That about covers my special contributions during that decade. The end of 1969 we had a nice farewell party--a lunch--for just our own TRU, and a cake in the afternoon because George Gates was retiring as well. At that time Frank Calkins gave me this "Wonderment". A "Wonderment" is a song. This one pleased me greatly.

Swent: Do you want to read it or do you want me to read it?

Campbell: I want you to read it.

Swent: All right.

Swent: Wonderful Catherine—. This is written October 26, 1969, when after a long struggle I felt that I had "made it"—tant bien que mal—with only two slips of the pen.

Campbell: Remember he's eighty-nine.

Swent: It's beautifully written, isn't it?

Wonderful Catherine.

In order to write an amusing verse on Catherine I have refused.

I wonder why, I wonder why.

In order to write amusingly one has to feel amused.

I wonder why, I wonder why.

And Catherine did too much for me to let me feel like that. She smoothed my petulant letters without ever making them flat

And listened to hundreds of stories about my Marvelous Cat. I wonder why, I wonder why.

"Dear Catherine: This wonderment says nothing about what you've done for countless other people and mentions only the two most obvious of your services to me. It would require too much space and more literary skill than I am blessed with to tell how much good it has done me to be able to count you as a friend. Many people will know that the cat is Sir Winston; fewer will know that most of the "petulant" letters, to quote a pet word of yours, related to the AGI glossary, but that doesn't matter. I close this note in the same fashion that Dr. Johnson closed some of his letters to Boswell. Your affectionate humble servant, Frank C. Calkins.

P.S. I feel sure after making a rough calculation that 'hundreds' is within the truth."

Campbell: [laughs] Isn't that a delight?

Swent: It's wonderful! It really is, it's a wonderment.

Campbell: Yes.

Swent: I think you also ought to read this citation, or the letter, on the editing of the earthquake series because that won't get in otherwise. There are two. There's a note here from Ed Eckel; then there's a letter from the head of the Department of Interior praising the Alaska reports. We can bind it in with the book; why don't we do that?

Campbell: Okay.

7
Sunday, Oct. 26, 1929. When, after a long struggle I felt that I had made a
tent last year. With only two and a half p.m.!

Wonderful Catherine

In order to write an amusing version, Catherine I've refused —
I wonder why, I wonder why —

In order to write amusingly, one has to feel amused —

I wonder why, I wonder why —

And Catherine did too much for me to let me feel like that:

She smoothed my petulant letters, without ever making them flat;
And listened to hundreds of stories about my marvelous CAT! —
I wonder why, I wonder why.

Dear Catherine:

This Undercurrent says nothing about what
you've done for countless other people, and mentions only the two
most obvious of your services to me; it would require too
much space, and more literary skill than I am blessed with, to
tell how much good it has done me to be able to count you as a
friend.

Many people will know that the CAT is Sir Winston;
fewer will know that most of the "petulant" letters (to quote
a pet word of yours) related to the A.G.I. Glossary; but that
doesn't matter.

I close this note in the same fashion that Dr. Johnson
closed some of his letters to Boswell.

Your affectionate humble servant,
Frank C. Calkins

* Frank C. Calkins, after making a rough calculation, that "hundreds" is within the truth.

Swent: This is inside the Alaska earthquake book from Ed Eckel. A nice little pat on the back.

Campbell: Yes. You want me to read this? This was inscribed by Ed Eckel on the last volume of the Alaska earthquake reports, one that he wrote himself. It says, "To Catherine Campbell with sincere thanks for all she did to this and other parts of the Alaska Earthquake series and for much much more. Edwin Eckel, December 1970." That's a nice bit on the flyleaf.

Swent: Yes, very nice.

Campbell: Is there anything more you want to say about the Survey?

Swent: I was interested in how you happened to be doing things for the state of Nevada.

Campbell: These were joint projects. Just as the Survey mapped the whole state of Kentucky. They are cooperative projects.

Swent: The states that didn't do their own reports independently?

Campbell: The Survey acted kind of like a consultant. They now have what they call cluster meetings with groups of state geologists and groups of USGS people so that they're working together and cooperating. It's a matter of where the money comes from. This was not unusual.

Swent: I know that traditionally the Survey has been very cooperative.

Campbell: Yes.

Anything else?

Swent: No, that's fine.

Joint Activities

Campbell: Now for the things that we did together.

Of course when we moved to San Francisco there were lots of parties. I want to mention a few of the welcoming parties given by the Chestermans, the Oakeshotts, the Fooses, the Hewetts, and the Henshaws. We really were made to feel welcome.

During 1960 was the first International Geological Congress that I went to. This was the one in Copenhagen that I have already mentioned.

Campbell: Our pre-congress trip was on the Gann (that's the name of the ship) that took us from Trondheim up to North Cape, stopping in all the fjords and getting out and looking at the rocks and hiking around—an absolutely marvelous trip. We went all the way up to North Cape. We anchored, and then we climbed up to North Cape to see the midnight sun. That was quite a climb.

Everybody who remembers the Copenhagen congress talks about the Gann. Then we had the meetings in Copenhagen itself, and those were great.

Our post-congress trip was up through Sweden, based on a train this time. The train cars would carry us north at night; then they would go off on a siding. The next day we'd get off and look at the geology and then we'd get back on the train and go off for another lap. The trip was led by Count von Eckermann, who was the best leader I think I've ever known on a geological field trip. He had been over every inch of the area before we all came. Whenever there was a good outcrop he would set off a dynamite blast and break up the outcrop so that we could all have hand specimens to take home with us, small enough in size so that they could be carried.

That Copenhagen IGC was absolutely tops. Ian and von Eckermann became close friends and they exchanged reprints and letters till he died.

We went to Western Mining Congresses practically every year and those were fun--Seattle, San Francisco, Las Vegas.

Another great joy was going to Mt. Tamalpais every Sunday that we were not otherwise engaged. We hiked and had a picnic. Our trail map is covered with red marks to indicate that we have taken that trail.

We had one especially nice day in 1962 when we were at Lucerne Valley. We met Tom Dibblee who is of course the greatest geologic mapper of all time. He took us all around the area showing us the geology and we really enjoyed the day.

Campbell: GSA in New Orleans was a special one. Gordon Atwater, whom I have mentioned before, had a home in Panama City. He took us there after the meetings, and we spent a couple of days with them. Then he flew us in his own plane back to New Orleans. That was the first time I had been in a little plane, just the three of us. It was really exciting to go over the whole Mississippi Delta low down in the plane.

Lots of other parties--the Blackwelders had a birthday party; the Hewetts had two anniversary parties, their fiftieth and their sixtieth; the McLaughlins had a party for L. C. Gratton and invited us; Jack Stark had a party for Evan Just and King Hubbert. I mustn't forget the Dibblee parties. Every Christmas the Dibblees had a perfectly gorgeous party for lots of Survey people and town people as well.

Swent: Where did they live?

Campbell: They lived in Menlo Park. They've now moved to Santa Barbara.

Swent: These other parties were all local?

Campbell: They were all local.

Swent: I thought maybe they were parties held in connection with Mining Congress.

Campbell: No, these were local parties.

The farewell dinner for DeWitt Nelson probably put us in the most exalted company we've ever been in. We were at the head table because Ian was going to take Swede's place. There were three California governors--"Pat" [Edmund G.] Brown, "Goodie" [Goodwin] Knight, and Earl Warren. I remember when Pat Brown introduced us to Earl Warren he said something like, "Ian is the most erudite scientist we have in state service," which was pretty impressive.

In 1966 GSA met in San Francisco--the first time it had been here. That meant lots of teas and cocktail parties. We had a hundred people or more in the apartment during the afternoons and mornings and evenings with teas and cocktail parties and whatnot. Robert Legget was president of GSA that year.

I went to quite a number of other meetings--AGI, AIPG, GSA, and Mining Congress--with Ian because I was interested.

Swent: It's amazing that you were able to do all this and still work full time too. You were working forty hours a week?

Campbell: Yes.

Campbell: One of our most exciting meetings was to the IGC in Prague. Our pre-congress trip there was in East Germany. We had only one difficulty and that was because we had a West German with us and the border guards didn't want to let him in. We had quite a long wait at the border before we could get Schroeder in but we managed. Thank goodness we did, because he was a godsend to me. He was bilingual and could interpret. He was almost always at my elbow, so I could know what they were talking about in German.

Swent: Do you know any foreign languages?

Campbell: I can get along in French. I used to know French pretty well, but it's slipped away.

Swent: You didn't have to have German for your Ph.D.?

Campbell: Yes, I had both, but that was long ago.

Swent: And that wasn't conversational either.

Campbell: No, it wasn't conversational, not at all.

We collected Carlsbad crystals, for example, in Carlsbad, which was exciting. We saw the place where Werner thought that he could prove that basalts were sedimentary. It was a long time before that theory was disproved. Then we went to the University of Freiberg Mining School in East Germany. We were very fortunate to have had this trip because it was not easy at all to get into East Germany.

Then we went to Prague. We had hotel reservations at the International Hotel which was on the same side of the river as the university, fortunately. We went to the opening session. Ian was on the American Committee, so he had to go to a special evening meeting that first night. He came back to the hotel; everything was quiet and everything was lovely. He had a beautiful walk; he walked back from the meeting. During the night I could hear planes, planes, planes. I thought it was awfully funny; we must be right on the line of the planes going in and out. Then we went downstairs for breakfast, and we were told that the Russians had taken over the city during the night. We looked out the front of the hotel and there were tanks and soldiers with their guns at the ready.

Swent: This was 1960--what?

Campbell: Nineteen sixty-eight.

And so, what to do, because it was time for the meetings to start. Ian was the second speaker in the morning program. Should we go or should we not? Here were these men with their

Campbell: guns pointing right at us. Ian said he was going to go and I said, "Well, I'll go too. I'm not going to have you go without me." Then Orlo Childs, who was the head of the Colorado School of Mines, an enormous man--the biggest man I have ever known--went with us, so we felt protected with Orlo beside us.

The first man on the program was a Russian, and he did not appear so Ian was the first man to speak. He gave his talk with knees shaking. They had of course a very small turnout, because nobody could come from the other side of the river, but they carried on. We had a couple of Russians with us on our pre-congress trip, and we got to be good friends with them. We saw them at the university and they turned their heads the other way. They were terribly embarrassed, just terribly embarrassed. It was a dreadful situation.

After the morning session, we went back to the hotel. The next day we went to the university and heard a few more papers, and then we had a meeting for the American delegation--all the Americans who were there. We appointed people to be leaders in each of the big hotels. These men were to go to the American consulate and see what could be arranged. In this way we weren't all milling around in a disorganized way, and it worked out pretty well.

Charlie Vitaliano of Indiana University and Father Jim Skehan of Boston College were the two representatives from our hotel. They were able to get a bus arranged for the next morning to take us to the railroad station. They urged us to go, because food was running out in the hotel, and they wanted to get the visitors out as soon as possible. So we managed. We went on the first bus. Some people stayed for one more day, and then they had a final exodus.

A train came through, and we got on it and went as far as Nuremberg. Schroeder, the West German who had been with us on our East Germany trip, was also on that train. He told us that there were lots of hotels in Nuremberg and he thought that we could probably find a room there. Some people went on to Frankfurt, but we got off at Nuremberg, and we were glad we did. We were with the Scheids--Vernon and Martha from Nevada--and got nice clean, comfortable rooms in a good hotel. Oh, what a relief! We hadn't had anything to eat since breakfast except for hard rolls that Martha and I had put in our handbags from breakfast, and we got some kind of drinks out of the window of the train. It was a dreadful experience.

We had planned a post-congress trip in Poland, but of course it was called off. We'd ordered a car--a Mercedes--in San Francisco, and it was to be picked up on a certain date at Stuttgart. By this time we were all off our schedule. But

Campbell: fortunately a travel agent in Nuremberg got us on a cruise down the Rhine so we had a beautiful trip on the Rhine, and then went to Stuttgart. The Mercedes came through a day early, and everything worked out well in the end.

The big event, perhaps the biggest in my life, was the GSA in Mexico City. I remembered so well as a young woman of twenty when I went to my first GSA and looked up at that head table thinking, "My goodness! What exalted people sit there." Never in my wildest dreams had I thought I would ever be at that head table and my husband be president of GSA. But sure enough we were there.

Swent: Where in Mexico City was it?

Campbell: Hotel Isabela. At least that's where our suite was. There was a big hall where we had the meetings. But the suite was at the top floor and I remember counting the coat hangers there--there were something like 150. They were expecting big parties!

Swent: And this was in 1968 also?

Campbell: That's right.

Swent: It was a big year then, wasn't it?

Campbell: A very big year, yes.

Swent: You were able to coordinate your leave from USGS--

Campbell: I had lots of leave; I had five weeks leave each year after that much time with the federal government, because I had had no break in service; it just carried over.

[Interview 5: July 18, 1988] ##

Swent: Now both of you retired in November, 1969, and were ready to do what you enjoy doing.

Campbell: --which was a wonderful situation.

But before I leave the 1960s I want to add one more note. This was a note that was sent to me by Tom Dibblee and I cherish it. I think you could just read it into the record.

Swent: All right. This is in the form of a little booklet that was prepared for your retirement with a number of letters in it. Here we have a picture of a potted plant of some sort which has some significance perhaps?

Campbell: No, I don't think so, it's just decoration.



To
CATHERINE
CAMPBELL

A real dignified and always
cheerful little lady,
like Ian, her glorious
husband

For so many years she has done such
a marvelous job of putting in order
reports by brainless or lunny rock-
pounders. Thanks to her - she has
the brains, will-power, and all it
takes to do such an impossible and
thankless task

I give her many many thanks for all
her efforts on my jobs. I deplore
much to see her go, but sincerely
wish the years to follow be her
most enjoyable

TOM DIBBLEE

(111)

Swent: There's a printed case, "To Catherine Campbell, a real dignified and always cheerful little lady, who like Ian, her glorious husband. For so many years she has done such a marvelous job of putting in order reports by brainless or looney rock-pounders. Thanks to her she has the brains, willpower and all it takes to do such an impossible and thankless task. I give her many, many thanks for all her efforts on my jobs. I deplore much to see her go but sincerely wish the years to follow be her most enjoyable. [Signed] Tom Dibblee."

Up in the corner there's a little sketch of you which you'll have to explain.

Campbell: Tom Dibblee loved all things round. They reminded him of his wife who had a round face. He was devoted to his wife. So whenever he found something round like a gourd, or a concretion, or a ping-pong ball he would draw on that round thing a picture of his wife, Loretta. These balls were known as "lorettas." I was very honored to have three lorettas given to me. One was for my office in Menlo Park, one was for the apartment here, and one was for the little house out at Lucerne Valley.

Swent: And here's one on the table?

Campbell: Yes.

Swent: It's a ping-pong ball, and it has very round eyes and little round curls of her hair. He's painted the face and the hair.

Campbell: Yes.

Swent: It's very intricate drawing.

Campbell: Very intricate, yes. These take a long time to prepare.

Swent: So this is a loretta?

Campbell: That's a loretta. And the picture in the upper left hand corner of my note is a catherine.

Swent: What's the significance of that?

Campbell: Just a picture.

Swent: Just a picture, no special shape or--

Campbell: It has eyeglasses that distinguish it from a loretta very clearly and immediately.

Swent: And he has drawn it.

Campbell: Yes. He did very nice work. He used to do little fossils on his maps to indicate a fossil locality--small things to indicate a shell here or a trilobite there. He drew little tiny sketches on his maps. They were interesting. He is a very talented man.

Swent: Let's identify Tom Dibblee a little bit more. He worked for the USGS?

Campbell: He worked for the USGS for many years.

Swent: His major field was--

Campbell: --geologic mapping. He's mapped more than any other living man in the state of California--many square miles. He was given the Distinguished Civilian Service Award a few years ago, which is the highest honor that is given to civilians working for the Department [of the Interior].

Swent: Did he work out of the office in Menlo Park?

Campbell: Yes. He's now retired and is on the faculty at the University of California, Santa Barbara. A foundation has been set up--the Thomas W. Dibblee Foundation--and donations are being received in order to publish in color many of the quadrangles that he has completed. Lots of them are still just black and white open-file maps. They deserve to be published in full color; slowly but surely this is being done.

Swent: How did your friendship with him develop?

Campbell: Just through editing his reports.

Swent: He must have been out in the field.

Campbell: He was out in the field, yes. He did the Palo Alto Quadrangle just weekends, because what was there to do weekends if you didn't map? [laughs] He was on the go all the time; he's a legend in his own day. He would just go out with a head of lettuce in his back sack and he would cover the ground out in the Mojave. He slept wherever he happened to be when night time came, and then got up in the morning to pick up where he had left off--mapping, mapping.

Swent: --with a head of lettuce? [laughs]

Campbell: --with a head of lettuce, yes, he liked lettuce for lunch. [laughs]

Swent: Did he take people with him?

Campbell: Lots of the time he was just by himself. He was staying in a little motel in Lucerne Valley one time when we were there. He came over to visit us in our little cabin. We went out for the day with him, and had an awfully good time traveling around the desert.

The Retirement Years in the 1970s

Campbell: We're going to organize this section the same as we did the last one, taking Ian's activities, then my activities, and then our joint activities.

Ian's Activities

Campbell: Ian had made very careful plans before he retired from the State Division as to how he was going to use his time. He had made arrangements with the California Academy of Sciences to be a research associate and have a place for his desk and some books and his big desk chair. He worked out a schedule so that he would go out almost every day if there wasn't anything else important to be done. He went out about ten in the morning and came back about four in the afternoon.

There was a very lively and stimulating group of people at the Academy. They called themselves the "Lunch Bunch." They had lunch down in the boiler room--a funny place--but they had a wonderful time there.

There was Bill Barbat who was retired from Standard Oil, G Dallas "Doc" Hanna and his wife, Margaret, and Charles Chesterman.

Swent: Chesterman had been with the division?

Campbell: Chesterman had been with the division, but he worked part time at the Academy. When he retired, he worked there three days a week. He was a great help in getting Ian organized and moved to the Academy from the Ferry Building.

Swent: You didn't go out there?

Campbell: No, I continued at the Survey.

- Campbell: Now for the things that occupied Ian during this period. The Registration Board for Geologists and Geophysicists took a lot of his time, going over papers to see whether people were qualified, and back and forth by phone with the secretary in Sacramento.
- Swent: I wanted to ask a little about that because I noticed in the proceedings of the Engineering Geology conference in 1969 that was mentioned as something that he had just been appointed to, and Reagan had organized this. Before then geologists were not registered?
- Campbell: Not registered, no.
- Swent: Who gave the impetus for that, do you know?
- Campbell: Ian gave a lot of the impetus. Wilford Peak from Water Resources was one of the early members of the board.
- Swent: What's the point of registering; why did there come a time when people felt that there was a need for this?
- Campbell: Geologists who weren't really qualified were giving people advice that wasn't very good. Also, different counties set up different standards. It was time to have some kind of control over the qualifications of the people who were working in engineering geology and in other geologic pursuits.
- Swent: This becomes important then at the same time that geology begins to change.
- Campbell: Yes, more urban interests. The engineers had been registering for many years before—the civil engineers, the chemical, and electrical—but geologists had not, and it seemed as though the time had come when there ought to be some kind of control.
- Swent: So this involves going to the legislature?
- Campbell: Yes, it does.
- Swent: Considerable groundwork.
- Campbell: Yes.
- Swent: And Ian was involved with this?
- Campbell: Ian was very much involved, and he was very much in favor of it. There's still controversy. Legislators decide they're not going to have registration for geologists any more because there hasn't been anybody kicked out of the profession for not performing properly, so people in Sacramento say what's the use of paying for a secretary and paying for the costs of an office and whatnot

Campbell: if there's been no real need or reason for it. So every once in awhile geologists get asked to write their representatives in Sacramento to say they feel registration is important.

Swent: There is a special office only for this?

Campbell: Yes, and a special man who's the executive secretary, John Wolf.

Swent: Executive secretary of--

Campbell: --the Board of Registration for Geologists and Geophysicists.

Swent: These people are serving as a volunteer job?

Campbell: Oh no.

Swent: The Board are paid?

Campbell: The Board are paid expenses to go to their meetings, which were held all up and down the state.

Swent: They're appointed by--

Campbell: They are appointed by the Governor.

Swent: I see. So this took a good deal of his time?

Campbell: This took quite a lot of his time. He was chairman of the board for several years.

Another thing that he was interested in was Voice of America. He was asked to make a tape on conservation and natural resources, which was one of his very good talks I thought.

Swent: This was broadcast worldwide?

Campbell: Yes, through Voice of America. He did a couple of those.

Another big project involved being chairman of a committee of the National Academy of Sciences--a very prestigious committee of ten geologists. It was called the Committee on the Geological Sciences. They met in Washington two or three times a year for several years. Each geologist contributed in his own field. This ended with publication of a book called The Earth and Human Affairs. The major author was Leo Laporte of the University of California in Santa Cruz. He gathered the parts together and put them in a form for publication. Ian helped see it through. It was published by the Canfield Press in San Francisco.

Swent: What was the date on that?

Campbell: The publication date was 1972. Working with a committee to put out a publication like this is really a hard job, getting everybody to agree on the wording and the substance.

Swent: I can imagine there was a lot of coordinating to do.

Campbell: Joe Berg, who was the geology representative at the National Academy of Science, and John Maxwell came all the way out from Washington to San Francisco just to twist Ian's arm to persuade him to be chairman of this committee. Ian didn't want to take it on at all, but they persuaded him to do it. It was very satisfactory in the end—a big job and time consuming.

Swent: These geologists are from all over the country?

Campbell: Yes. Ian had a lot to do with choosing them too.

He was also on the GSA Council during these years and was going back and forth to Boulder [Colorado] for council meetings.

We had a significant meeting one evening—a dinner party. This party was arranged by George Lindsay at Arthur Court's house. Arthur Court is a mineral collector and an interior decorator. He had a beautiful mineral collection. Arthur had an idea that he wanted to write a book on minerals. He had the specimens, and he knew a very fine photographer, but he didn't have an author. So he persuaded Ian to write the book.

This project was a great joy to Ian. He really was back to his first love, mineralogy, and he spent many long, happy hours writing the text.

Swent: He had a great gift with the language.

Campbell: Ian had a great gift with language. It was finally published and is a handsome coffee-table book with beautiful pictures and good writing.

Swent: The name of it is Minerals: Nature's Fabulous Jewels by Arthur Court and Ian Campbell and photographs by M. Halberstadt.

Campbell: Published by Abrams.

Swent: In New York. It is truly a gorgeous book. This was in--?

Campbell: In 1974 it was published.

We went to a minerals conference put on by Stanford at their Sierra camp. Ian was on Evan Just's panel. Evan did an excellent job in handling the group. We were there for about a week and had a perfectly delightful time.

Swent: Up at Fallen Leaf Lake?

Campbell: Yes, Stanford's Sierra camp.

Ian had a nice surprise from Cal Tech in 1971 when he was made Professor Emeritus. Having been away for ten years it was quite a surprise and a pleasant one.

One of Ian's ex-students of many years past asked him if he would do a consulting job in Managua, Nicaragua. The people were working with Parsons Engineering as consultants, and they wanted an overview of the work that was being done by Bob Williams who was the geologist there. So Ian went down to Managua, and I went with him. We were there for a couple of weeks. The hotel where we stayed was completely demolished later on by the earthquake.

Another nice thing that happened was that Ian was given the Ben Parker Medal by AIPG, that's the American Institute of Professional Geologists. This is the top award given by AIPG. It was awarded at a meeting in Oklahoma City.

Then Ian was in the hospital again for a bladder operation; this was at Stanford Hospital in Palo Alto where he'd had his cancer treatments before. The doctor was very concerned about it and wanted him to stay close by, rather than coming back to San Francisco. He stayed two or three weeks with his sister in Palo Alto so that he would be nearby in case of a hemorrhage or something--I don't really know what the doctor was afraid of.

But as luck would have it the proof of the minerals book came through just at that time, so Ian had something really big and really important to keep his mind occupied. I carried page proofs back and forth. He had a very pleasant time in Palo Alto, and everything went well.

He was asked next to write a foreword for the new Glossary of Geology, which had just been completed. He wrote a very nice foreword that has been quoted all around the country.

He was president of the California Academy of Sciences from 1970 to 1974, and during that time he was also president of the Registration Board for Geologists and Geophysicists. He was also on the Seismic Hazards Advisory Committee for San Francisco.

Swent: Who were they advising?

Campbell: The supervisors of San Francisco; nothing really ever came from that committee. There should have been, but it wasn't a very active committee.

Campbell: In Anaheim we had an AAPG meeting at which Ian was given the Public Service Award, which was one of the high awards given by AAPG. At that same meeting the Sidney Powers Award, which is the top award of AAPG, was given to Gordon Atwater—a very good friend whom I have mentioned before. He followed Ian as president of AGI. Another medal (there were three big medals given at AAPG meetings)—I can't remember the name of it—was given to Hollis Hedberg who was also a good friend, a professor at Princeton. We managed somehow to get the six of us together, Jean and Gordon Atwater, and Hollis and Frances Hedberg, and Ian and me, for a dinner party. It was really marvelous, because Gordon Atwater didn't live very much longer. He was in very bad shape at that time but he made it to the meeting and managed to give his acceptance speech.

Then Ian got the highest award from the AEG, honorary membership, at their meeting in Los Angeles. We were away at that time but Dugald read his acceptance speech. Ian wrote it and Dugald read it.

Swent: Where were you?

Campbell: Off on one of our trips, I don't remember exactly.

Then we had a nice surprise. Ian was put on the United States panel of an international Committee on Geoscience and Man, a very prestigious group from all over the world. The meeting was at Bad Hamburg in West Germany, sponsored by the Werner Reimers Foundation. Expenses were all paid by this foundation. We had people from Italy, from France, from England, from the United States, from Germany. We were put up in a beautiful hotel and had a great time. I don't know how we ever happened to be chosen, but it was fun.

Swent: Did this result in a publication?

Campbell: Not to my knowledge. There may have been a publication, but I don't know anything about it.

In the spring of 1974 Ian was asked to be a visiting professor at the University of New York at Binghamton. He had conferences with students and gave talks—we spent a very pleasant week there.

In 1975 on top of everything else that he was doing as continuing projects, he was asked to be on the Visiting Committee for the Department of Geological Sciences at Harvard for the Board of Overseers and he was chairman of that committee for several years; in fact he was chairman when he died. This

Campbell: involved trips to Cambridge once or twice a year and that was fun for him; he really enjoyed that association. The committee did a lot of good, I'm sure.

Swent: What did they do?

Campbell: They were advising as to what changes might be made in the curriculum.

Swent: Keep them up to date?

Campbell: Keep them up to date.

Another interesting job he had was being consultant for the British Columbia Hydro-Electric Company--they always called it BC Hydro. There were two new dams being built; one was on the Peace River which goes into the Arctic drainage. This pleased Ian because he'd never worked that far north before. He went on many trips back and forth to Vancouver and then out to the dams. He was still on that committee when he died.

Our last trip overseas was to Australia to the International Geological Congress at Sydney. Ian chaired one session of the International Association of Engineering Geologists, and he gave a paper there. We really enjoyed that trip. I'll speak more about that when I talk about our joint activities.

Our last trip to the East Coast was to an Association of American State Geologists meeting in Newark, Delaware. As always, the State Geologists meetings were great fun.

##

Campbell: Now we go to my activities during the 1970s.

Catherine's Activities

Campbell: I retired in 1969. But soon I had a phone call from the Survey asking if I would come back to work WAE--that means When Actually Employed. So I began my Tuesday trips to Menlo in 1970.

My first big job was to work on the San Francisco Bay Region Project; I was called back to do this by Bob Wallace and Art Grantz. Bob Wallace has played an important role in my life. He always seemed to be spurring me on.

Swent: He was also an editor?

Campbell: Oh, no, he's a senior geologist in the Branch of Earthquakes, Volcanoes, and Engineering.

This project was a joint project involving the USGS, HUD [U.S. Department of Housing and Urban Development], and ABAG [Association of Bay Area Governments]. The Survey had never done anything like this before and it turned out to be a very interesting project.

We produced a tremendous volume of work. We put out Basic Data Contributions fast and furious. We put out over seventy maps with text that went with them. For example, we did maps showing earthquake faults in the various counties. We had landslide maps, we had flood-prone-area maps. A lot of them were ongoing projects of the Survey, but they were put into this series because they were pertinent.

We published six big technical reports and eight big interpretive reports, so it really kept us busy and I was very much involved, deciding how to put the reports together and choosing illustrations and covers.

For example, here is one of our professional papers that was part of the cooperative work. We used this cover for all of the professional papers. I very much wanted a wrap-around cover because the picture covered such a large area.

Swent: This is a satellite photo of the Bay Area?

Campbell: It's a photo from a U-2 aircraft. We used this photo for all our professional papers, but we printed it in different colors. For example, the flood-prone one was blue and the seismic safety one was black.

Swent: The USGS was doing the maps and the geology; what were HUD and ABAG putting into this? Were you coordinating three agencies on each volume?

Campbell: We were in a way. HUD and ABAG served as a kind of link between the geologists and geophysicists and the regional planning agencies and decision-makers. Representatives from these agencies reviewed the reports and made suggestions.

Swent: It looks as if USGS did most of the basic work.

Campbell: Yes, it does.

Swent: I did go over some, and I was very much impressed by the amount of work.

Campbell: Yes, we put out a tremendous number of reports.

Swent: And they're beautiful publications.

Campbell: They are really good and very valuable contributions.

This one on "Evaluating Pollution Potential of Man-Based Waste Disposal," that's probably something that HUD had something to do with.

I didn't have anything to do with the editing of that report, just the geology ones.

Swent: And ABAG was--

Campbell: ABAG was very active.

Swent: Did they do any of the editing?

Campbell: No, not detailed editing. But they reviewed the reports.

Swent: You did the editing?

Campbell: I did much of it. Rachel Gulliver who was working with me was another editor.

Swent: Here is a professional paper entitled "Quantitative Land Capability Analysis: Selected Examples from the San Francisco Bay Region." It was done by Ray Laird who was with ABAG. How many people could squeeze in, is that what they're talking about?

Campbell: Yes, how much the land could support.

Swent: These must be guide books that are still referred to.

Campbell: Oh yes, I'm sure they are. Especially this one on seismic zonation. It is used a lot.

Swent: By city governments and developers?

Campbell: Yes.

So that project took care of a lot of the early days of the seventies when I was going back and forth to the Survey.

Swent: Just one day a week?

Campbell: I brought work home a lot then.

Then Donald Nichols, who was an engineering geologist, asked me to work with him editing a volume on "Environmental Planning in Geology." I did a lot of work on that--editing and rewriting.

Swent: That's HUD again and USGS.

Campbell: Yes.

Swent: U.S. Geological Survey, U.S. Department of the Interior, and the Office of Research and Technology of the U.S. Department of Housing and Urban Development. Donald R. Nichols and Catherine C. Campbell, co-editors.

Campbell: That's right. We had the layout done by a man in Washington, because Don wanted an especially good job.

Swent: It's a handsome cover.

Campbell: It's quite a nice book, and well put together. Don and I each got an award from AEG for putting it out.

Swent: This is the result of the proceedings--papers from a conference which Ian must have been very much involved in.

Campbell: He was, because he contributed an article in the book.

Where was the conference?

Swent: The conference was here in San Francisco. It was the Symposium on Engineering Geology in the Urban Environment. Participants came from many different disciplines.

Campbell: It was at the Jack Tar Hotel.

Swent: Proceedings of the Symposium on Engineering Geology in the Urban Environment arranged by the Association of the Engineering Geologists for their October 1969 national meeting in San Francisco. The keynote speaker was Rolf Eliassen, Professor of Environmental Engineering at Stanford, and there were many other distinguished speakers.

Campbell: During this period I couldn't get along on just one day of work a week, so I decided I would do volunteer work at the USGS Public Inquiries Office on Battery Street in San Francisco. I took over the job of distributing the Bay Region Basic Data Contributions and reports. Hundreds of requests for them came in from people all over the country, but particularly from California of course. Four days a week I would go down and open the letters and send off the copies requested. Cartons of copies were sent here from Menlo Park. These were from the San Francisco Bay Region Project that we've been talking about.

Swent: What's included in basic data?

Campbell: All kinds of subjects. Do you want me to read off some titles?

Swent: Please do.

Campbell: "Map Showing Recently Active Breaks Along the San Andreas Fault"; "Geologic Map of Palo Alto"; "Geologic Map of the Southern Part of the Redwood Point Quadrangle, San Mateo County"; "Faults that Are Historically Active That Show Evidence of Geologically Young Surface Displacements"; "Map Showing Areas Serviced by Municipal and Private Sewerage Agencies"; and so on. As I said before, there were seventy Basic Data Contributions.

Swent: So these people who were writing in and requesting reports were probably going to build a shopping center or a house or something?

Campbell: Very likely.

Swent: Where to build and where not to.

Campbell: Yes, here are some more: "Bedrock Surface Map of the San Francisco North Quadrangle"; "Precipitation--Depth Duration Frequency Relation for the San Francisco Bay Region"; "Water Temperatures of California Streams." All sorts and kinds of topics. They were put in attractive envelopes that you would be proud to have on your desk, not just dull grey.

So I worked four days a week down at the PIO and sold things in between times when I wasn't busy with my distribution job. This was all volunteer work, and I enjoyed it.

Then I had another telephone call from Bob Wallace. This was in 1974 when we had the oil embargo. The federal government had to oversee how oil could be allocated. There was no organization set up that could handle this, so they asked every federal agency to provide "bodies" to make up a group that would handle the distribution. I was here in San Francisco, and the office was going to be in San Francisco, so Bob asked if I would take it on full time. This was quite a shock.

There was one other Geological Survey employee who was also retired. He had been in the Oil and Gas Division, he was a petroleum geologist, David Cerkel, and he and I were the two "bodies" that were provided by the U.S. Geological Survey. We had people from the Bureau of the Mint, we had people from the Park Service, we had people from the Post Office. The most motley crew you could imagine. I was one of the early ones to go to work.

We had three little offices in a suite in the Federal Building. There were maybe ten or a dozen of us milling around--none of us knew anything about what to do. The telephone was just ringing like mad, because nobody could get gasoline and they had to have their allocations. Building contractors were out in

Campbell: the hall in droves, mad as heck because they had deadlines to make, they had to have gas, and they had to have diesel. It was scary, it really was scary, because we didn't know what in the world to tell them.

Swent: Was this only for this area?

Campbell: Oh, for California, Hawaii, Arizona--

Swent: Region nine probably.

Campbell: Region nine probably.

Then we had more and more people coming in to work.

Then we moved to a full floor of one of the buildings down on Market Street. Winter came on, and we had a bus strike in San Francisco. I had to walk back and forth to work every day in the dark, because we had double daylight saving then; we had daylight saving in the winter, which we hadn't had before. It was really quite an experience.

We finally got organized so it wasn't just bedlam and chaos. I got settled in as head of the letter-writing group. We had hundreds of letters coming in, and I worked out form letters for various and sundry requests and answers. And then I wrote lots of letters just for individuals. Some of them I wrote by hand because we didn't have enough secretaries, we didn't have many typewriters, we didn't have calculators. It was just unbelievable, just unbelievable!

I was supposed to be there for sixty days and it turned out to be six months.

Swent: How did the Department of the Interior happen to get involved in this?

Campbell: It was more than the Department of the Interior, we had people from every kind of federal agency.

Swent: Imports were cut off, and we were forced to use domestic supplies only; was this the problem?

Campbell: Yes, and the oil that we had was being allocated. Gas-station people were wild, because they couldn't make ends meet and many had to close.

Swent: The corporations, the oil producers, couldn't handle the allocations themselves?

Campbell: I guess not.

Swent: I'm wondering how the government happened to get into the act; I don't remember.

Campbell: I don't either, I never knew. I was just plunked into it.

Swent: It was almost the same situation as a war-time organization of resources.

Campbell: Yes, it was. Finally it settled down after about six months. People who had been on temporary assignment, as I was, were moved out, and people who wanted to stay full time were moved in. It became an organized group with certain people writing letters, certain people answering phones. That was part of my job too, the phone bank.

Certain people were going over forms and that was, again, a dreadful situation. The forms were complicated and many of these contractors and gas station people were not able to really cope with them. Then in the middle of everything the form would be changed, and they'd come in with their forms filled out and I'd say, "I'm so sorry, the form has been changed and you've got to do another one."

We couldn't cope with the phones at first, not at all. We just turned the ring down so we didn't hear it; it was just flashing, flashing, flashing lights all the time.

So people came in person, because they couldn't get through on the phones. They came from all over. I remember one man from Honolulu had come over--that was a dreadful situation. He came in, sat down, and filled out his form. He got everything done. He had a taxi waiting, because he was trying to make a plane back home. He got down to his taxi and remembered he hadn't signed the form. So he came back up, and they couldn't find his form. He'd just left it there fifteen minutes before. He got the taxi paid off and finally they found the form, but it was too late to make his plane. It was just bedlam, just wild.

But in the end it worked out smoothly, and I really quite enjoyed the job.

Swent: It was exciting, anyway.

Campbell: Very exciting, yes. And I certainly saw the birth of an agency because here we were starting with about ten people and when I left we had moved down to the Barclay Bank Building and I think there were two whole floors with dozens and dozens of people, I don't know how many.

Swent: What was it named? Did it develop a name?

Campbell: The Federal Energy Administration. I'm not sure what it is now.

The Bay Area Environment and Planning Studies, which is what I was talking about before the energy crisis, was winding down. While we were working on that project, the Survey had hired a planner by the name of Bill Kockelman. He was working with Bob Brown and Andy Spieker and me in the Office of Environment and Planning. I worked with him on planning reports and in what we called environmental geology--it's the application of geology to environmental problems.

I was talking with Gordon Oakeshott and Phil Bradley after Gordon's presentation the other night, and Gordon was saying that when AEG was first founded he thought he wasn't eligible to be an engineering geologist; he didn't know anything about engineering geology. Then he realized that engineering geology was nothing more than the application of geology to engineering problems. The same thing is true of environmental geology.

The Portola Valley Study is an example. The San Andreas fault goes right through that development, and the developer was very wise in having a thorough geological study made before starting the project. The houses are all clustered away from the fault, and the area near the fault line is all open space. That sort of thing is what we call environmental geology. It is closely related to engineering geology.

I worked with Bill Kockelman on his reports, and he asked me to be co-author on a couple of them. Do you want those titles?

Swent: Yes, please.

Campbell: One was called "Two Examples of Earthquake Hazard Reduction in Southern California," and the other was, "The Use of Geologic and Seismologic Information to Reduce Earthquake Hazards in California." They're both just short articles.

I enjoyed working with him, and I am in the office adjoining his to this day.

Swent: These were again publications of USGS, were they?

Campbell: The first one was in the Earthquake Information Bulletin. The second was in a Water Resources Journal that was published in Alabama.

Swent: Although they sound as if they're pretty local, they were published nationwide?

Campbell: Yes, both of them were.

Campbell: Then in 1977 I had another call from Bob Wallace. [laughs]

This was the most prestigious report that I ever had anything to do with. It was "Earthquake Hazards Reduction: Issues for an Implementation Plan," put out by a working group on earthquake hazards reduction by the Office of Science and Technology Policy, Executive Office of the President of the United States.

This again was a committee report which is always a very difficult thing to edit, to get everybody satisfied. I was the editor working with Karl Steinbrugge. I'll just read what Karl says in his acknowledgments.

"The text is the product of many hands using many styles, then modified and rewritten by many others. I am grateful to Dr. Catherine Campbell who repeatedly tried to bring uniformity to this diversity and yet fully retain the character of the authors' thinking." I think that was very nice; I was pleased with it. And a very nice book was the result of all that labor.

That finishes up the 1970s which were happy until near the end.

Joint Activities

Campbell: Now I'm going to talk about our joint activities of the 1970s.

In the spring of 1970 we had a trip to England and Scotland. We went punting on the Thames with Ian's godson who was at Oxford, and we visited relatives.

Swent: Who is his godson?

Campbell: Andrew Howe Browne--a first cousin twice removed.

Swent: He's from the United States?

Campbell: No, he's Scottish. He now lives in London.

One of Ian's good friends at the University of Oregon was John MacGregor. John was very active in the organization called People of Scottish Heritage in the United States. He invited us to go to Culzean Castle in Ayrshire for a dedication of the so-called Eisenhower flat. Eisenhower stayed at Culzean Castle during the war years, and money was donated to keep his flat as it was when he was there. There was a big celebration when it was dedicated. John MacGregor was master of ceremonies, and he

Campbell: invited us to attend. We met dukes and duchesses and all kinds of important people. We just happened to be at the right place at the right time.

We went to Athens next, where we met Gordon and Jean Atwater. They were great travelers, and they took us to places we never would have seen if we hadn't been with people who really knew Athens.

Then we took the Greek Island cruise. We had a beautiful time there.

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Campbell: Also in 1970 was the Managua trip where we stayed at the Gran Hotel--a little hotel downtown, not the big Intercontinental. It had a beautiful pool, and I had a lovely time swimming every day while Ian was out in the field. It was a very relaxing and happy two weeks.

Swent: What did you particularly enjoy doing on your travels?

Campbell: Just seeing the countryside.

Swent: Did you do geology?

Campbell: No, we weren't doing geology.

Swent: But you enjoy the geologic features?

Campbell: Yes.

Swent: Do you like adventures in food?

Campbell: Yes, we like adventures in food.

Our next trip was to Hawaii. This was a GSA trip where Don Peterson, who was the head of the Volcano Observatory at the time, took us out to see Mauna Ulu--a great show with cascades and fountains. It was really thrilling.

Swent: Which island is that on?

Campbell: It's where the observatory is on the big island. We never could have seen it if it hadn't been for Don Peterson. We were most fortunate.

In 1972 the International Geological Congress was held in Montreal. The pre-congress trip was up the west coast to Alaska. The Hurlbuts from Harvard, who are very good friends, were on that same trip. We had a beautiful time. We went up to Skagway.

Swent: Before going to Montreal?

Campbell: Before going to Montreal.

Swent: They aren't very near each other.

Campbell: No, but it was all part of Canada.

Our post-congress trip was an engineering geology trip around Toronto.

Another good trip in the seventies was to East Africa. It was wonderful; we just loved the animal parks.

We visited a friend, another old Harvard friend from the thirties, Jay Lagrange in Johannesburg. He arranged a trip for us into one of the gold mines, the Vlakfontein, on the East Rand. We went down 2,500 feet, well below sea level, in a skip. Of course we had to put on all kinds of equipment. We had lights on our hard hats, and batteries on our belts, and boots. I didn't really expect to be able to go down, but they apparently had no problem about having a woman in the mines.

I remember as we were going down in the skip there was a line marked on the wall when we passed sea level. We went way, way down below that. It was hot as heck. We walked and walked and walked down a tunnel to the place where they were mining. I thought, "I'll never get back, I'll never make it back." We were going down hill all the way. I was pretty apprehensive, but when we got down to the area where they were actually mining, they put us in a little mine cart and took us back to the skip. So that was a great help. It was an exciting experience!

Swent: They must have been doing some ventilating and air conditioning.

Campbell: Oh yes, yes, a terrific amount of air was being pumped down.

Another good trip in the seventies was to the Galapagos Islands. This trip was with the California Academy of Sciences. We really enjoyed it. All the strange creatures, wonderful birds.

Then we had a trip to Egypt--this was just pure pleasure. We stopped first at the Azores and had a lovely time there walking about and enjoying the countryside. Then a trip up the Nile by ship to Abu Simbel, a gorgeous trip.

Campbell: Then, as Ian wrote on one of our Christmas cards, one of the highlights of all of our years was the launching of the Apollo XVII.

Jack Schmitt, who was one of the astronauts, had been one of Ian's students. Jack was the only geologist who got to the moon. He was devoted to Ian. He wrote to us in June to say that the launching was going to be in December, and he would suggest that if we wanted to go--he was going to send us an invitation--we'd better see about a place to stay.

So that very day I walked down to the Holiday Inn and started asking for reservations for December near Cape Kennedy. Everything was taken already. They were just astonished. I finally got reservations in a little motel in Orlando which was quite a distance from Cape Kennedy.

Anyway, we went and we saw it, and it was very, very exciting. At the last minute there was trouble, and they had to delay the launch. We thought we'd never, never see it. But they fixed whatever was wrong and we saw the launch. It was lots of fun; it was night, of course, and we were wandering all around the area, and found lots of friends to talk to. But the launch really was the highlight.

We had a trip to Indonesia which was, again, pure pleasure. This was a Lindblad trip.

Another pure pleasure trip was to Ethiopia with Swan, the British travel group.

Lalibella was one of the highlights of that trip; that's an area where churches had been cut right out of the living rock. They're like caves but beautiful.

Swent: You went to a lot of places just in time, didn't you?

Campbell: Yes.

Swent: Some of those places you wouldn't go to now.

Campbell: On that trip we went to England and Scotland to visit Ian's cousins.

In 1974 we went to Bad Hamburg in Germanay where Ian was on the U.S. panel. A woman from London, whose husband was on the panel, had just bought a new Jaguar. They brought it with them to Germany. She wanted to show off her car so she took the ladies--there were four of us--on a trip to Rothenburg which



Ian Campbell and Harrison "Jack" Schmitt, Presentation of Lunar Award.
Geological Society of America. Dallas, Texas. November, 1973.

Campbell: wasn't too far from Bad Hamburg. Of course the autobahns are absolutely marvelous. I was sitting in the front seat so I could see the speedometer and it was up to one hundred.

Swent: Kilometers?

Campbell: No, it was not kilometers, it was miles. I asked specifically. I was terrified.

After we left Bad Hamburg we took a cruise up the coast of Yugoslavia--a beautiful trip. We were the only English-speaking people on the ship except for the purser; he was able to communicate a bit.

In 1974 too we went to Binghamton, New York, where Ian was a visiting professor for a week or two.

After that we took a trip through upstate New York, and the Finger Lakes.

We had an AASG meeting in 1975 in Asheville, North Carolina. I always enjoyed those meetings because they were a small group, and all very congenial.

Swent: This is the State Geologists meeting?

Campbell: Yes.

In the fall of 1975 we went to a GSA meeting in Salt Lake City, then to an AIPG meeting in Tucson via Monument Valley, Canyon de Chelly, Oak Creek Canyon, Grand Canyon--oh, that was a beautiful trip. Ian presented the Ben Parker medal to Linn Hoover in Tucson.

Our last trip out of the country was to the International Geological Congress in Sydney, Australia. We visited cousins on that trip in Townesville, Queensland. Ian had cousins all over the globe. We visited other cousins in Wellington, New Zealand. We went to the Hermitage on Mt. Cook. Beautiful, beautiful country. We went to Rotorua, the geothermal power plant in Wairiki. Then we went to Auckland. We visited sixteen relatives during this trip. It's marvelous the way they have kept in touch with each other.

I went to my fiftieth reunion in 1977 at Oberlin. It was interesting, but I didn't know anybody there. I was glad to see the changes. I hadn't been back for fifty years.

Cal Tech had its fiftieth anniversary of the Geology Department in 1977 too. Ian was chairman of the first session and did a beautiful job, even though he was getting more and more incapacitated.

Swent: With cancer?

Campbell: The cancer was coming back.

Our last trip to the East was another AASG meeting in Newark, Delaware, and en route we visited the Virginia Campbells, the grandson of Hugh Campbell who was the original member of the clan who came over from Scotland. On that trip we followed the Blue Ridge Parkway down to Washington. I thought that it was the most beautiful drive I had ever taken. The highway was built by the WPA [Works Progress Administration]. It is a lovely parkway. It has a low speed limit; it's thirty-five or forty-five. There is a high-speed route parallel to it, so if you're in a hurry you take the high-speed route and if you just want the pleasure of a beautiful, slow trip you take the Blue Ridge Parkway.

We had our last trip to Lucerne Valley in the spring of 1977. Lucerne put on the most spectacular display of wildflowers that we had ever seen. I always thought it was just in Ian's honor, since it was his last visit.

Ian died in February, 1978.

V THE YEARS ALONE

Campbell: Now we go to my life by myself. Ian left a wonderful legacy in his sister, whose husband had died just a couple of years before. She, Flora Houck, and I became very close friends, because we were both widows and each needed support from the other.

Swent: She lived near you?

Campbell: She lived at Channing House in Palo Alto.

I spent a lot of time with her. We would go down to her beach house together for weekends, and we sometimes would go up to Napa on weekends.

Then she had a stroke and I was the person who could help most in going back and forth to see her. Her daughter, Janet [Houck Boretal], who has a book store in Orinda, was very busy. But Flora and I had a very nice relationship.

After Flora died in 1980, Janet took over. I'm a kind of surrogate mother, and she's my surrogate daughter. I see Janet practically every week. If I don't see her, we talk on the phone. It's been a wonderful relationship. I think she's enjoyed it too.

As far as work is concerned I continued working on the interpretive reports. These were the last ones of the series, the big professional papers of the Bay Region study: the landslide-prone areas, the slope stability, the flat-land deposits, etc. The seismic safety ones were the ones that I was particularly involved with.

Swent: You had stopped the work at the Information Office?

Campbell: Yes. After I finished the job with the Federal Energy Agency I didn't go back.

Swent: When did you start the swimming? Was this something that you started or you had just always done?

Campbell: When did I start the swimming? It was 1975. I was asked to join the Metropolitan Club, and that's when I started the swimming. Since 1975, I've kept a pretty regular schedule of swimming three times a week.

I got my last award, a Superior Achievement Award, for my work with the energy group. I was on WAE at that time and didn't get holiday pay or sick leave or annual leave even though I was on full time. I think the Survey wanted to do something to say "thank you" so they gave me a Superior Achievement Award. [laughs] That led me to look up what other awards I had received. You asked me for this information.

Swent: Yes, please don't be modest.

Campbell: When I was with the Navy I had four Outstanding Performance Awards and four Superior Accomplishment Awards. For the USGS I had two Outstanding Performance Awards, one Meritorious Civilian Award, and then the Superior Achievement, which I just described. So that makes a total of twelve, which is a pretty good record.

Swent: I don't think they gave those to you just to be nice. I think you must have earned them.

Campbell: I earned some of them; I really earned that last Superior Achievement I think. That was a wild period.

Then in 1985--I was changed from WAE to career status, part time. This was really wonderful because then I could earn two hours of annual leave every two weeks, sick leave, which I've never used, and holiday pay. Only once have I had a Tuesday as a holiday. But it's a much more satisfactory arrangement to be on career status.

My next big job was for the National Petroleum Reserve in Alaska, NPRA. This is a huge report on the Survey's contributions to that study. There are something like thirty-eight chapters.

Swent: I saw one report on that subject.

Campbell: Yes. We did another volume which we called the "glamour volume." It is a coffee-table kind of book. I did a lot of the editing on that. It turned out to be a very nice report. The director, Dallas Peck, wanted to have something come out that was more readable for the public than the big professional paper that has just slowly, slowly gone through the mill.

Campbell: Another big job was to prepare reports that were going to be published by AAPG in the Circum-Pacific project. I can't remember how many articles slowly went through the editing process. Now I seem to be settling down to do the editing on reports for the journals. It seems to work out pretty well because most of these reports are short, under fifty pages. In one week or two weeks, I can get one of these reports through the text editing.

Just for fun I started keeping track of how many reports I have done. I started counting the first of the fiscal year which was the first of October, 1987. From October 1987 to July 1988, I did thirty-four articles--1,357 pages.

Swent: That's just in this year?

Campbell: October 1987 to July 1988. So that's working out very well, and I think I'm doing a reasonably good job on it.

That brings us up to the present as far as work is concerned.

The trips that I have been taking during the last few years have been great joys, so I'll just go through them very briefly.

My traveling companions were often the Waldos, who live in Carmel. Allen Waldo went to Harvard with us in the 1920s and 1930s, and his wife, Cherrie, is a Wellesley graduate. We have kept in touch over the years. Allen taught at Stockton, but is now retired. They wanted to go to the International Geological Congress in Paris, and I did too, so we decided to join forces. It worked out very well.

The pre-congress trip was on volcanoes. We saw Vesuvius and Stromboli and Etna and had a great time. Then we went to the geothermal fields at Larderello. So I've now seen the three great geothermal areas in the world: the one here at Geyserville, the one at Rotorua in New Zealand, and the one in Italy.

Our meetings were in Paris after the pre-congress trip. Our post-congress trip was "geology and wine." It was in southern France, and it turned out to be a great trip.

My next trip was in 1981--another Swan trip. I invited Catherine Houck to go with me. She is the daughter of George Houck, my nephew. She was sixteen and had never been on any trips east of the Cascades. She just loved it, and I saw things through her eyes, which was really great fun.

Swent: Where did you go?

Campbell: Around Britain on the S.S. Orpheus from Southhampton to Edinburgh. Then on to the Shetlands and the Hebrides and the Isle of Lewes where we got Harris tweeds, and Ireland, and the Channel Islands and the Orkneys and back to Southhampton. It was a great trip and Catherine was fun to be with.

Swent: Is she your namesake?

Campbell: I guess so. We said she was.

I'd been wanting to go to Easter Island for years. Ian and I tried once, but the trip was canceled. Then mid-1982 I found in The New Yorker an ad for a trip by Nature International--a group that I'd never been with before--that was going to Easter Island, so I just signed up all by myself.

I roomed with the leader, Kay Antunez. It was a small group of eight, there were four men and four women, and we had a really wonderful time. I think four of us had Ph.D.'s, it was a really congenial group.

We went to see the Nazca lines, we went to Cuzco, and we went to Machu Picchu.

Swent: Those are in Peru?

Campbell: Yes. Then we went to Easter Island. We were there for a whole week. Sergio Rapu who was the head of the museum there--he's getting his Ph.D. at the University of Hawaii--took us under his wing for the whole week. He was there evenings to give us lectures, and he was there during the days to take us out to see all the great heads, and tell us all about the island.

We stayed, not at the modern motel, but at a little private home run by Rosita. I think our party took up the whole house. She cooked wonderful meals. I still think it is the best trip I've taken since Ian died.

Swent: It sounds marvelous.

Campbell: The next trip in May, 1983, was to Japan and China. Again, I went all by myself.

##

Campbell: I wanted to see China, and I decided I'd do it on a cruise. So I went on the Pearl of Scandinavia which was not a topnotch ship. Again, I took a chance on a roommate. It turned out to be a woman from San Diego who was, of all things, a retired bus driver. She had been a bus driver for years. During the war when there were few men she became a trolley-car driver. Then

Campbell: after the war she became a bus driver. She invested her savings well. All her life she had wanted to travel, so now she is doing it. I think her highest education was the fourth grade. She was very interesting to travel with. I've seen her a couple of times since; she's been to San Francisco and we've had lunch together.

Swent: Schooling and education are not always the same, are they?

Campbell: That's right.

We went first to Pusan, South Korea; then we went to Beijing and saw the Great Wall and the Ming Tombs and the Forbidden City. We went to a silk factory which was fascinating—the cocoons and the way they unwind the silk. Then we went to Xian where the terra cotta army is. I was very glad to be able to do that; just a few of us took that trip.

In 1984 the Waldos and I thought of going to the IGC [International Geological Congress] in Russia, but as we read the brochure we got more and more unsure about it. We thought it was going to be a terrible hassle. The Waldos discovered that Stanford was having a trip to Russia, a cruise up the Volga. They said, "Why don't we do that instead?" and I said, "I'm all for it." I'm glad we did because all that I've heard from the people who went to the IGC said it left much to be desired.

We went to Leningrad, to Moscow, and then Rostow on the Don. We got on the ship at Rostow and sailed up the Volga. We had marvelous lecturers from Stanford.

Swent: Those Stanford tours are always well done.

Campbell: Oh, they are really wonderful.

In 1985 we did another one. This was the Danube trip with an extension through Austria. And, again in 1985--the Waldos went on both these trips--we went to East Berlin and East Germany. We had an extension through Poland.

In 1986 I went by myself on the Statue of Liberty trip, when she was rejuvenated. We were right there, right beside the statue with all the fireworks on the Fourth of July. It was terrific. I had a marvelous roommate, again just by chance--Wendy Hepperle. She lives over on Cathedral Hill. She's an attorney, and a perfectly delightful person. We've been in touch since; it's been fun knowing her.

This was a cruise. We got on the ship in Boston and ended up on the Fourth of July in New York Harbor. Then we went all the way up the Hudson to West Point, stopping all along the way, then we came back down.

Swent: So you were on a ship in the harbor?

Campbell: We were on a ship right next to the statue. It was a beautiful ship, the Newport Clipper. It was perfect. I met nice people on the trip. I enjoyed Wendy Hepperle so much, my roommate.

Then the Waldos had another idea in 1987. Society Expeditions was putting on a trip to the Mariana Islands. It was a Navy League trip--sort of a nostalgic trip for people who had fought in Okinawa and that part of the world.

The leader was a friend of the Waldos and they said, "Come on, let's go on this trip," and so we did.

Another Stanford trip I took, by myself, was the Canadian Maritime trip. It sort of did me in because we had a terrible gale when we were off Newfoundland and I got thrown around a lot. Some people got really hurt, broken ribs and heart attacks and all kinds of dreadful things. Fortunately I just got bruised and strained. But I've never been quite the same since. That was 1987.

This spring the Waldos and I went on the Mississippi River Stanford trip on the Delta Queen. It was just a delight. Thank goodness we got that trip in before the drought when ships got stuck on the sand bars.

Before I go into my concluding remarks I thought I'd better catch up on the children.

Dugald is still, and has been for many years, working with the same foundation engineering firm--Moore & Taber. Dottie, his wife, is doing volunteer work as she has for many years.

Michael, their son and our grandson, went through the Whittier schools and graduated from Cal Poly in San Luis Obispo.

Denise, who is just two years younger than Michael, went through Whittier schools and graduated from Pepperdine University.

Michael is now working for Moore & Taber and doing very well, and Denise is working for Pacific Bell on cellular phones.

Swent: And you still have your place in Lucerne Valley?

Campbell: Yes.

Swent: Do they ever go there too?

Campbell: Yes. I see them every year at Christmas at Whittier. They have come to Lucerne Valley a couple of times when I've been there during the last ten years. They've been here a few times. I don't see them too often. Of the family, I really see Janet Boreta most often.

Swent: They're all busy.

Campbell: They're all busy, and they're farther away. But we talk on the phone and keep in touch. It's a very good relationship.

I thought maybe I'd just pull things together in a way.

I have always felt that Ian was unique in the breadth of his contributions to the earth sciences. First and foremost of course was his teaching career at Cal Tech, and I'm sure he feels--felt--that was his greatest contribution. Many, many of his former students have told me what a wonderful teacher he was. One of the characteristic things about Ian is the way he followed the careers of his students all through their lives. If someone got an award or some special recognition and he read about it in "Geotimes" or elsewhere he would always write a letter of congratulations. I'm sure they all appreciated his continued interest in their lives.

Then came the years of being state geologist. Here he lifted the division by his mere presence and his administrative style to one of the top if not the top state survey in the country.

Last but not least were his contributions to the professional societies. He belonged to many of them and gave unstintingly of his time, as witness the presidencies and awards he was given. GSA, MSA, AASG, Branner Club and LeConte Club presidencies to name a few. And the awards given by AIME, AIPG, AAPG, AEG, and the Mineral Societies of America.

Swent: That's lots of societies.

Campbell: Lots of societies and lots of recognition. He really gave of himself.

I've always said that my main claim to fame is that I was Ian Campbell's wife. I hope I've been giving this impression during this discourse. I also hope that those who listen to this oral history will agree that they also serve who only sit and edit. [laughs]

Swent: Thank you so much, Catherine. You've done a wonderful job of describing both your husband's career and your own, and it has been a real pleasure to interview you.

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TAPE GUIDE--Catherine C. Campbell

Interview 1: February 15, 1988	1
tape 1, side A	1
tape 1, side B	11
tape 2, side A	19
tape 2, side B	26
Interview 2: March 14, 1988	30
tape 3, side A	30
tape 3, side B	39
tape 4, side A	48
Interview 3: April 11, 1988	55
tape 5, side A	55
tape 5, side B	64
tape 6, side A	72
Interview 4: June 13, 1988	80
tape 7, side A	80
tape 7, side B	88
tape 8, side A	97
Interview 5: July 18, 1988	104
tape 9, side A	104
tape 9, side B	113
tape 10, side A	122
tape 10, side B	130

Catherine C. Campbell--appendix

Christmas Newsettes, 1972-1977

Memorials to Ian Campbell

By Charles Chesterman for American Mineralogist

By Richard H. Jahns for The Geological Society of America

By Gordon B. Oakeshott for The American Association of
Petroleum Geologists

By Robert P. Sharp for Engineering & Science

Ian Campbell, "The Role of State Governments in Urban Geology,"
for a symposium on Engineering in the Urban Environment, October 1969

News release, written by Catherine Campbell and edited by Ian Campbell,
for the report of the October 1969 symposium on Engineering
in the Urban Environment

CHRISTMAS NEWSETTES

From 1959 to 1977, Ian Campbell wrote an
annual "Christmas Newsette."
They were so widely acclaimed by the recipients
that six are included here.

Seasons Greetings



THE CAMPBELLS'

CHRISTMAS NEWSETTE

1972

Within the lengthening annals of these yearly newsletters, the past twelve-month will assuredly go down as one of the biggest and best ever. The report on *The Earth and Human Affairs* by a committee of the NAS-NRC on which Ian has been working for over two years has just been published by Canfield Press. The report on *Environmental Planning and Geology* for which Catherine was co-editor, came out earlier in the year. For this she recently received a very handsome certificate of appreciation from the Association of Engineering Geologists. Ian also completed, early in the year, his last report on the AID program in Nicaragua. And a *Foreword*, which he was asked to prepare for the new *Glossary of Geology*, will be out by year's end.

Yet the year has by no means been "all work and no play". Do you recall those lines from the old railroad ballad: "Said Casey Jones, just before he died/there's two more lines I'd have liked to tried"? Two things we have long wanted to see: a lava flow in action and the pyramids of Egypt. This year we saw both! On a field trip following Geological Society meetings in Honolulu in March we visited Maui and Hawaii. Fortune favored us: the lava flow from Mauna Ulu was performing at its best (including cascades and fire fountains). To see "magma" is certainly one of the greatest thrills that can come to a geologist.

There were other field trips too: pre- and post-International Geological Congress, for which Canada was host this year. The first took us up the coast from Vancouver to Skagway and return. Imagine our luck in seeing Mendenhall Glacier under a cloudless sky! The second took us on an engineering geology jaunt through eastern Canada and included Niagara Falls. All these trips provided snapshots which in any other year would have headed the Newsette. But the big trip was still to come: the Azores (enchanting unspoiled islands); Britain (enjoyable visits with cousins in England and Scotland); and *then* a two-week cruise up the Nile from Cairo to Abu Simbel. What marvels both of engineering and of art those ancient Egyptians wrought! They must be seen to be believed. One glimpse only we can provide for you in the Newsette. But pay us a visit any time and we'll show you much, much more!

The coming year promises continued activity. Ian was elected for another term to the presidency of the California Academy of Sciences. He has also acquired the presidency of the State Board of Registration for Geologists, and was appointed recently to a newly formed Seismic Hazards Advisory Committee for the City of San Francisco. Catherine is continuing her volunteer duty at the Public Inquiries Office of the USGS and spending occasional days at the USGS office in Menlo Park.

So, once again, having compiled a necessarily hasty (we have just returned from Egypt) and an altogether inadequate report on a wonderful year, we wish you all the best for the season and for 1973.

CATHERINE AND IAN CAMPBELL

Seasons Greetings



THE CAMPBELLS' CHRISTMAS NEWSETTE — 1973

Our long-time readers will recall, and others might be reminded, that — because of the lead time for press runs and mailing — our annual Newsettes chronicle not the period from year-end to year-end but from November to November.

One event of last December deserves recording in any "high-lights of all our years": an invitation from our geologist-astronaut to attend the launch of Apollo 17. What an unforgettable and spectacular sight (and sound!) that was — the more so because of the agonizing two-hour delay that had preceded the final event.

The success of Apollo 17 augured well for events in 1973. We spent three days in Pasadena in January (the most for a long time) visiting old friends and participating in a "welcome-back" party for astronaut Jack Schmitt. Then came other high-lights: the Cordilleran Section meetings in Portland, Oregon; the annual meeting of the State Geologists Association at Stone Mountain, Georgia (our first visit to that state); the annual meeting of the American Association of Petroleum Geologists in Anaheim, where Ian received the Association's Public Service Award (a great, but very pleasant surprise); a reappointment by Governor Reagan to a four-year term on the State Board of Registration for Geologists (subsequently Ian was elected president of the Board for another year); a reappointment to the Seismic Hazards Advisory Committee for the City of San Francisco; an Honorary Membership in the Association of Engineering Geologists (no end of pleasant surprises this year!); and, most recently, reelection to the presidency of the California Academy of Sciences.

Withal, we've still found time for more distant travel. In June and July we were on the MV LINDBLAD EXPLORER for a cruise through Indonesia, all the way from Java and Bali to the little-known southwest coast of West Irian where live some of the world's most primitive people — people who have given up head-hunting only in the last two or three years, but people whom we found friendly, gentle, and artistic. From this trip comes our best "small-world" story of the year: encountering Jack Schmitt in the bar of the LINDBLAD EXPLORER, anchored in Denpasar Harbor, Bali! (Sorry, no time or space here for details.) This trip also afforded opportunity, in Portuguese Timor, for a snapshot (above) of two enthusiastic dry-land sailors.

Now, we are just returned from a month in Scotland, England, and Ethiopia — the last under the guidance of SWAN's of London, with whom we made our Nile trip last year. This visit to the oldest independent Christian nation in the world should be a good base from which to extend our Christmas wishes. We haven't had time to process any snapshots, so we may include one from Ethiopia in next year's Newsette. And, speaking of next year, along with our best wishes for the Christmas season, we want to add "Happy New Year".

CATHERINE and IAN CAMPBELL

Seasons Greetings



THE CAMPBELLS' CHRISTMAS NEWSETTE - 1974

Conservation! This has been a goal for many, for many years. Now it should be a watchword for all — whether our concern is to restrain today's inflation, or to assure a viable world tomorrow. Moreover, it serves to explain in part why we are using a 1973 (to be sure, a *late* 1973) snapshot for our 1974 Newsette. We are conserving!

So, there we are in Lalibela, Ethiopia. No snapshot can do justice to those remarkable 15th century churches, carved — inside and out — from the living rock in a spot still so inaccessible it can only be reached by plane and jeep. Truly Lalibela churches deserve to be ranked among the "wonders of the world".

By comparison, 1974 has been a less spectacular year. But it has had its memorable doings. A year ago Catherine was "drafted" back into full-time service by the U.S. Geological Survey and loaned to the new Federal Energy Administration on what was to have been a 60-day detail. It lasted six months, and she heard enough sad stories of the "energy crunch" to last a lifetime. As a result, even with the situation currently much eased, we are — and will continue to be — very energy conscious.

We made one foreign trip this year. This was to attend a meeting of a committee on Geoscience and Man, hosted most generously by the Werner Reimers Foundation in Bad Homburg, Germany. Following that conference, we flew to Venice and boarded an Italian ship for a week's cruise along the Dalmatian Coast, with spectacular scenery and interesting history all along the way. Then to London and way points in England to visit cousins and experience the delights of the quiet and historic Suffolk countryside — a section we had never before visited. We've had a few domestic trips also. In late spring Ian spent a week as a visiting professor at the Binghamton campus of S.U.N.Y. (a most attractive area of the Empire State). We followed that by some travels through the Finger Lakes country just as spring blossoms were reaching their peak. Recently we've completed a swing that took us to the American Mining Congress in Las Vegas and the Association of Engineering Geologists' annual meeting in Denver.

Catherine is now happily back to one day a week at Menlo Park for the USGS. Ian, as usual, is spread among a number of "extra-curricular activities", including continuing as president of the California Academy of Sciences, and as a member of the State Registration Board for Geologists and Geophysicists (he finished his two-year tour as president of that Board in July). Almost any day now he looks forward to publication, by Harry Abrams, Inc., of a "coffee-table" book on minerals he has co-authored with Arthur Court. Only last week he finished taping another round on "Conservation of Natural Resources" for the Voice of America.

And now the season is here when we both want to wish you a very MERRY CHRISTMAS and a very HAPPY NEW YEAR (with lots of conservation!).

Seasons Greetings



THE CAMPBELLS CHRISTMAS NEWSLETTE - 1975

This year we bring you, to wrap up our Christmas greetings, not a snapshot of ourselves in some faraway spot, but a picture of the whole family - the first time we've posed this Party this is because with inflation, recession, and in many parts of the world a violent turmoil, how fortunate we feel to have shared Ethiopia, Portugal, Timor, and the scores other things were seemingly peaceful! We've continued our trips to the continents U. S., and partly because it is high time we reported on the second and third generations.

So good fortune it was August we showed the first full gathering of the Clan we've had in a long time when, for a few days, some 27 assorted brothers, sisters, nephews, cousins, aunts, and uncles got together in the San Francisco Bay area.

In the standing, most near Pasadena, on the California coast, we from left to right: our granddaughter Denise (24), a freshman at high school; Catherine, our son David, a senior with engineer in a geological engineering firm in England; our grandson Victor (16), a junior at high school; our daughter-in-law Dorothy, a member of "Outstanding Young Women of America" and last, David and Dorothy have each recently been awarded honorary life memberships in the Parent Teacher Association.

In October last finished his tour as president of the California Academy of Sciences, but continues there as a research associate. In the meantime he has taken on the chairmanship of the Working Committee for the Department of Geological Sciences at Harvard, representing two trips to Cambridge during the year. He also made a trip to British Columbia as consultant on two new dams, one at the north of the Peace River (the first time he has ever geologized in the Arctic straits!). Catherine continues her part-time work with the U. S. Geological Survey and was most pleasantly surprised during the year to find herself the recipient of a "Special achievement award" for her work with the Federal Energy Administration.

We had two enjoyable trips this year, each including places never visited before. In late spring we flew to Asheville, North Carolina, for the annual meeting of the State Geologists' Association, and followed up with a trip to see old friends in Asheville, South Carolina, and thence north on the Blue Ridge Parkway (an outstanding drive) to west coast in Virginia. We took in "Colonial Williamsburg" and ended that trip in one of Catherine's girlhood haunts, Litchfield, Connecticut. After a short winter in home we moved up the NH seacoast ("great" to some of you!) and took off for meetings of the Geological Society of America in Salt Lake City. Thence we cruised southward for more geological meetings in Tucson, taking in Natural Bridges, Monument Valley, Canyon de Chelly, Oak Creek Canyon, and Grand Canyon along the way. During this trip we were most favorably impressed by the quality of the work that the National Park Service is doing, and the State Park system as well.

Now, even before we are fully unattached from this last trip, we are at our usual scramble to get our annual "Newsletter" through the printers and into the mail in time to reach you with our best wishes for Christmas and the New Year.

Seasons Greetings



THE CAMPBELLS' CHRISTMAS NEWSETTE - 1975

This year we bring you, by way of our Christmas greetings, not a snapshot of ourselves in some faraway spot, but a picture of the whole family - the first time we've done this. Partly this is because with inflation, recession, and so many parts of the world in violent turmoil (how fortunate we feel to have visited Ethiopia, Portugal, Timor, and the Azores when things were seemingly peaceful!), we've confined our trips to the continental U. S.; and partly because it is high time we reported on the second and third generation.

By good fortune in late August we enjoyed the first full gathering of the Clan we've had in a long time when, for a few days, some 17 assorted brothers, sisters, mothers, fathers, cousins, aunts, and uncles got together in the San Francisco Bay area.

In the snapshot, taken near Pescadero, on the California coast, are from left to right: our granddaughter Denise (14), a freshman in high school; Catherine; our son Dugald, a senior soils engineer for a geological engineering firm in Anaheim; our grandson Michael (16), a junior in high school; our daughter-in-law Dorothy, a biographee in "Outstanding Young Women of America"; and Ian. Dugald and Dorothy have each recently been awarded honorary life memberships in the Parent Teacher Association.

In October Ian finished his tour as president of the California Academy of Sciences, but continues there as a research associate. In the meantime he has taken on the chairmanship of the Visiting Committee for the Department of Geological Sciences at Harvard, necessitating two trips to Cambridge during the year. He also made a trip to British Columbia as consultant on two new dams, one as far north as the Peace River (the first time he has ever geologized in the Arctic drainage!). Catherine continues her part-time work with the U. S. Geological Survey, and was most pleasantly surprised during the year to find herself the recipient of a "Special achievement award" for her work with the Federal Energy Administration.

We had two enjoyable trips this year, each including places never visited before. In late spring we flew to Asheville, North Carolina, for the annual meeting of the State Geologists' Association; and followed up with a trip to see old friends in Abbeville, South Carolina, and thence north on the Blue Ridge Parkway (an outstanding drive) to visit cousins in Virginia. We took in "Colonial Williamsburg" and ended that trip in one of Catherine's girlhood haunts, Litchfield, Connecticut. After a quiet summer at home we revved up the 1968 Mercedes ("gneiss" to some of you!) and took off for meetings of the Geological Society of America in Salt Lake City. Thence we cruised southward for more geological meetings in Tucson, taking in Natural Bridges, Monument Valley, Canyon de Chelly, Oak Creek Canyon, and Grand Canyon along the way. During this trip we were most favorably impressed by the quality of the work that the National Park Service is doing, and the State Park systems as well.

Now, even before we are fully unpacked from this last trip, we are in our usual scramble to get our annual "Newsette" through the printers and into the mail in time to carry to you our best wishes for Christmas and the New Year.

Seasons Greetings



THE CAMPBELLS' CHRISTMAS NEWSETTE - 1976

The long-time readers of our Christmas Newsettes may be surprised or even shocked to see that for the first time in these annual portraits, the authors are almost "cut off at the knees". So, we hasten to assure you that this is not symbolic of what age, or inflation, or other adversities have done to us. It is simply an attempt to bring you, with our small camera, as much as possible of Ayers Rock - that startling and scenic monolith that rises so starkly from Australia's "Red Center". It has been described (deservedly, we think) as "the world's largest outcrop". It was also the high point of our journey to the 25th International Geological Congress, for which Australia was the host this quadrennium, and where Ian gave a paper now slated for publication in the Bulletin of the International Association of Engineering Geologists.

That whole affair was for us the big event of this year, coupled as it was with visits in Queensland and then in North and South Islands of New Zealand with some 16 "down-under" cousins, many of whom we were meeting for the first time. Despite assorted ages and degrees of consanguinity, they all provided warm hospitality and much of interest to their American cousins. We came away with increased pride of family - of which, to be sure, we have always enjoyed a full share!

There were other high points in 1976 that deserve mention: a visit from a favorite British cousin - her first time in America - which gave us an opportunity to show off a small part of California. There was the annual meeting of the Association of American State Geologists, held this year in Vail, Colorado, which provided good company, fine geology, and exceptional scenery - even including a June snowstorm! Memorable, too, was the annual meeting - the first we had attended in some time - of the American Association of Petroleum Geologists in New Orleans. And Ian had another trip to British Columbia to review progress on B. C. Hydro's two new dams.

The "Bicentennial" year has left us relatively unscathed. Ian did contribute an invited article on "Petrography" to Scribner's Dictionary of American History, published on the Fourth of July.

During the year Ian completed a 16-year term on the Board of Trustees of the California Academy of Sciences, but has taken on what may well be a more onerous post, member of the Board of Directors of the Comstock (the cooperative apartment where we live). He was reappointed to the Seismic Hazards Advisory Committee for the City of San Francisco, and continues as chairman of the Visiting Committee on the Geological Sciences for the Harvard Board of Overseers. Catherine continues her part-time work for the U. S. Geological Survey and has expedited and shepherded to publication several lengthy papers on different aspects of the San Francisco Bay Area geology.

Election day is just a week away as this is being written. Whichever way you, and we, vote, may it bring happy results. And in any and all events, a Merry Christmas and Happy New Year.

CATHERINE and IAN CAMPBELL



Seasons Greetings

The Campbells'
Christmas Newsette
1977

"Into each life some rain must fall". This may seem a surprising statement with which to begin our 1977 chronicle, written as it is in the year of California's great drought. But it does, in part, epitomize the year for us. The first (figurative) shower started in February when Ian was hospitalized for removal of malignant nodes on a lymph gland in his neck. The malignancy was in fact more widespread, so that he has since been on a program of chemotherapy. This proved so successful that a month after leaving the hospital he was on a consulting job on a dam-site on the Peace River in Latitude 56° N, and temperature 0° C. And later in the spring he made two short trips to Cambridge in connection with the Visiting Committee on Geological Sciences of the Harvard Board of Overseers — a committee which he has been asked to chair for another three-year term.

The second "shower" came in October — most unexpectedly in view of the considerable progress that the chemotherapy had induced. It involves a lame leg for which Ian is temporarily "grounded" while on a program of cobalt therapy.

So much for the "showers"; it's more fun to review the extensive periods of sunshine. In June Ian was again in British Columbia, this time on a dam-site on the Pend O'Reille River. But the Big Event of the year was Catherine's participation in the 50th reunion of her Oberlin College graduating class in early June. From Oberlin she flew to Washington, D. C., to be met by Ian, just flown in from San Francisco. Thence we drove to Wytheville, Virginia, for a visit with favorite cousins and then to follow the Blue Ridge Parkway north into Shenandoah National Park. Beautiful country, a beautiful time of year, and the incredible paucity of traffic added to the delights of the trip. Five days of this, and then to the annual meeting of the State Geologists' Association, for which Delaware was the host state for the first time. These are always interesting, informative, and enjoyable occasions.

Except for an occasional trip to Los Angeles, that's been the extent of this year's journeyings. As a result, it seems appropriate for our 1977 snapshot, to present one taken the other day almost on our own doorstep. You are looking east down Clay Street from the corner of Jones (our apartment building is on that corner). Dominating the view is the Transamerica Pyramid — now one of the distinctive features of the San Francisco skyline. In the far background is the Diablo Range. Mt. Diablo itself (well known to all geologists because it is the center point for the Mt. Diablo Meridian and Base Line) is mostly hidden by the pyramid.

Before closing, we should report that we both keep busy in "retirement". Ian still serves on the State Registration Board for Geologists (although his last term is officially over) and on the city Seismic Hazards Advisory Committee. And, in an unthinking moment, he accepted election as president of the Comstock Apartment Corporation. Never has he had a presidency so fraught with problems! Catherine has been spending one day a week for the U. S. Geological Survey at Menlo Park, but currently is more than fully occupied with the co-editorship of a major report, on reduction of earthquake hazards, for the President's Committee on Science and Technology. Truly, there is "never a dull moment". May Christmas and the New Year bring the same to you!

CATHERINE AND IAN CAMPBELL

Memorial of Ian Campbell¹ October 17, 1899–February 11, 1978

CHARLES W. CHESTERMAN

*California Division of Mines and Geology
San Francisco, California*

The death of Ian Campbell in San Francisco, California, on February 11, 1978, brought to a close the varied, long and colorful career of a most remarkable man.

Born in Bismarck, North Dakota, young Ian and family moved to Oregon, where he had much of his early schooling and graduated from the University of Oregon with an A.B. degree in 1922. During the next decade, he had a teaching fellowship for one year at Northwestern University, spent a season with the Wisconsin State Geological Survey, worked for Vacuum (now Mobil) Oil Company, completed his graduate program with a Ph.D. from Harvard University in 1931, and taught at Louisiana State University.

Ian was on the faculty of the Division of Geological Sciences at the California Institute of Technology from 1931 to 1959, and during this period he held appointments with the U. S. Geological Survey, the Carnegie Institution of Washington, and during World War II with the University of California Division of War Research at the Navy Radio and Sound Laboratory at San Diego.

In 1959 Ian was appointed to the position of Chief of the California Division of Mines and Geology and State Geologist, and during the following 10 years he initiated the Division's geophysical and geochemical programs and established a geological hazards program.

Ian was a respected scientist, and a warm and devoted leader. His work on nonmetallic minerals made him one of the country's foremost authorities in the field of these interesting and useful materials. He maintained an intense and active interest in minerals throughout his professional career, and, shortly



following his retirement from state service in 1969, co-authored an outstanding book titled *Minerals—Nature's fabulous jewels*.

He served in many capacities. From 1967 to 1969, he was Secretary of the State's Geothermal Resources Board. He chaired the State's Advisory Committee on Geographic Names, was a member and chairman of the committee on Geological Sciences of the National Academy of Sciences–National Research Council, member of the federal Committee on Surface Mining, and served for four years on the U. S. Committee of the International Union of Geological Sciences. Ian was a charter member of the California State Board of Registration for Geologists and Geophysicists, of which he was President from 1972 to 1974.

Ian also served his country and state. He volunteered for duty in World War I and was sent to

¹ To obtain a copy of a selected bibliography of 37 items, order Document AM-79-102 from the Business Office, Mineralogical Society of America, 2000 Florida Ave., NW, Washington, DC 20009. Please remit \$1.00 in advance for the microfiche.

France and Belgium as a member of an ambulance corps. During World War II he served as member of Selective Service Board 190 from 1940–1946, and was chairman of Board 92 from 1948–1959.

Ian's professional associations were many. He held many offices and was past national president of the American Geological Institute, the Geological Society of America, the Mineralogical Society of America, and the Association of American State Geologists. He was past president of the Branner Geological Society; the California Academy of Sciences; the Cal-Tech Chapter of the American Association of University Professors; Pacific Division, American Association for the Advancement of Science; and the LeConte Geological Society. Ian was very active in the American Institute of Mining, Metallurgical and Petroleum Engineers; the American Commission of Stratigraphic Nomenclature; University of California Institute of Marine Resources, Advisory Council; and the American Association of Petroleum Geologists. He was a member of Sigma Xi and the American Geophysical Union.

Honors were his, also. He received the Hardinge award from the American Institute of Mining, Metallurgical and Petroleum Engineers in 1962; the Ben H.

Parker award from the American Institute of Professional Geologists in 1970, and in 1973 the American Association of Petroleum Geologists presented him with the Public Service Award. He was an honorary life member of the Pacific Mineral Society, and honorary life member of the American Association of Petroleum Geologists, a distinguished member of the Society of Mining Engineers, and a member of Phi Beta Kappa.

And, on a non-professional level, he was a member of the Athenaeum Club of California Institute of Technology, the Commonwealth Club and the Engineer's Club of San Francisco, and the Masonic Order. He was a Unitarian, and a member of the Layman's League.

Ian Campbell leaves his wife Catherine, of San Francisco; his son Dugald Campbell, of Whittier; sister, Mrs. Flora Houck, of Palo Alto; and two grandchildren, Michael Ian and Denise.

There was a job to do, and "it really doesn't matter who does it or who gets the credit, just so long as the job is done properly and on time." Ian Campbell, the scientist, teacher, colleague, administrator and humanitarian, loved his fellow beings, and in turn he was deeply respected and beloved by them.

Memorial To Ian Campbell 1899-1978

RICHARD H. JAHNS

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Ian Campbell was born in Bismarck, North Dakota, on October 17, 1899, and died in San Francisco, California, on February 11, 1978. That span of nearly eight decades represented, for this most uncommon man, a lifetime of intense activity, remarkable accomplishment, and widespread influence as a geologist, educator, administrator, and public servant. The world was specially blessed in many ways by the Campbell presence thanks to his numerous skills, his capacity for getting things done, and his unswerving devotion to others. Unusual personal characteristics and operating style, much appreciated by all who knew him, were vital elements of a career and of achievements that can be but briefly recounted here.

Ian enjoyed a happy and lively boyhood, first on a North Dakota sheep ranch and then in Eugene, Oregon, where his father had a cherry orchard. That western move was a good one for him, who even then was a sensitive observer of his surroundings. He quickly fell in love with the fields, the trees, and the climate of his new state, and he was to remain an ardently loyal Oregonian for the rest of his life.

Some of his activities during early school years provided tips-offs for things to come. Young Ian was, for example, a bright and diligent student unusually well-liked by others. He sought and recognized humor in nearly all things, and he was a tough competitor both in the classroom and in a variety of extracurricular activities that he later would refer to as "friendly little games of skill and chance." Frequently emerging as the unassuming winner of spelling bees, arithmetic exercises, and other scholarly contests, he also excelled in one-on-one outdoor pastimes such as marbles, footracing, and the propelling of various objects at selected targets. With his relatively slight build but excellent agility and quickness, he would have been a sensation with the trisbee or hula hoop had either device then been available. As it was, he developed capabilities that were to confound some of his associates in later years.

It was only natural that Ian should matriculate at the University of Oregon in Eugene. His academic work was soon interrupted, however, when he volunteered for World War I military service at the age of seventeen. He was accepted by the U.S. Army and assigned to duty as an ambulance driver on the Western Front in France and Belgium, where he served in the 91st Division of the A.E.F. for two years. Not surprisingly, the records indicate that he did a good job, less formal records indicate that he also became "racehorse funny," champion of the 161st Ambulance Company. After his military discharge, he evidently retained a keen interest in tough vehicular exercises, soon embarking on a kidney-pounding motorcycle trip from Portland, Oregon, to Portland,

Maine. For this successful effort, no small accomplishment at the time, he was awarded a medal by the Harley-Davidson Company. Ian and his motorcycle friends were known as the "Kindred of the Dust," for few roads were paved in the early 1920s.

Ian received an A.B. degree in geology from the University of Oregon in 1922 and an A.M. degree two years later. He left Eugene in 1922 to accept appointment as a University Fellow at Northwestern University, hoping to return someday to a career in Oregon. Except for occasional visits and two sessions of field work, this was not to be. From Northwestern, Ian moved to Harvard University as a Teaching Fellow (1924-1925), thence to Louisiana State University as an Assistant Professor of Geology (1925-1928), and back to Harvard as an Instructor in Mineralogy and Petrography (1928-1931). He received his Ph.D. in Economic Geology from Harvard in 1931. During the span of his graduate years, he spent a field season with the Wisconsin Geological Survey and also worked as a mineralogist/petrologist for the Vacuum (now Mobil) Oil Company; the Panama Corporation, Ltd.; the Texas (now Texaco) Company; and Standard Oil Company of California. His unusual skill with the petrographic microscope opened many laboratory doors for him, and he contributed to a rapidly growing body of knowledge about heavy minerals in sedimentary rocks and the usefulness of these minerals in stratigraphic correlation.

In 1929, through a series of contacts stemming from that sheep ranch back in North Dakota, Ian met Catherine (Kitty) Chase, who had been an instructor in Geology at Mt. Holyoke College and then a graduate student at Radcliffe College. They were married the following year, and for nearly half a century theirs was a remarkably tender and understanding relationship from which students, colleagues, and countless friends drew many benefits. Kitty received her M.A. degree from Radcliffe in 1930 and a Ph.D. in micropaleontology in 1932, a year after she and Ian had left the area for a life in California.

With his acceptance of a post as Assistant Professor of Geology at the California Institute of Technology in 1931, Ian Campbell entered upon a new and fruitful phase of his career. Caltech, then emerging as an institution of considerable distinction, proved to be a good home for him, and he served it well for nearly three decades. A truly vintage year came early in this long period of affiliation, for in 1934 a sun was born to the Campbells, Ian was promoted to Associate Professor (an impressive step in that depression year), and he was appointed a Research Associate of the Carnegie Institution of Washington. Under the aegis of the Carnegie Institution, he studied the Archaean terrane in the Grand Canyon of the Colorado River, and in 1937 he was leader of a pioneering Carnegie-Caltech geological expedition through the canyon. That strenuous but successful trip, made with John H. Maxson, Robert P. Sharp, John T. Stark, and Edwin D. McKee, led to several useful publications.

On other fronts, part-time field work with the U.S. Geological Survey involved Ian with altered volcanic rocks at Tonopah, Nevada; with metamorphic rocks in Montana and Idaho; and with magneite deposits in eastern Washington. Over a period of nearly three decades, he also found time for studies of stratigraphy and structure in eastern Oregon, some remarkable dike rocks in western Arizona, and clay deposits and metasomatic deposits of magnesium in southern California.

During his Pasadena years, Ian's greatest and perhaps most lasting influence stemmed from his role as an able teacher and warm friend of many, many students. Then as now, the average Caltech student was exceptionally bright and hard-working, rather demanding, and capable of corrosive criticism. Ian fueled the brightness, supplied plenty of challenging work, satisfied all but the most unreasonable expectations, and was spared any serious attempts at corrosion. His courses were well organized and up to date, he was

an articulate and informative lecturer, and his overall approach was balanced and thorough. He insisted upon mastery of basic information and procedures, especially in work with the microscope, and he then urged his students to think about what it all might mean. He was capable of imaginative departures from the pedagogical routine, as when he presented to a finely tuned Ph.D. candidate one hard, smoothly rounded specimen for identification that turned out to be a kidney stone from his Norwegian elkhound. And several of us still recall our long-past shock resulting from a final-examination question in his crystallography course, asking us to describe the symmetry elements of a die lying in random position on a craps table.

Students were drawn to Ian Campbell by his humor and informality, they respected his mental quickness and sound judgments, and they were improved in countless ways by his energetic example. Most of all, they knew that he cared about them, each and every one. They saw him as a delightful person whose strong pride in his Scottish ancestry was reflected by a liking for Highland history, bagpipe music, porridge, and Scotch whisky. He took consistently liberal stands on political issues and conservative stands on many academic ones, and he enjoyed the role of vigorous advocate for causes in which he believed, but he was most relaxed and happy in the field, whether alone or in a large company.

Ian was extraordinarily generous with others but sparing in attention to his own requirements. Perhaps it was self-imposed Scottish thrift that held him for years to an ancient office telephone, a petrographic microscope of even greater vintage, and a dictation device of early Edison affinities. He punched at a noisy, somewhat fractious typewriter that generally responded with lami impressions from a worn-out ribbon, but a product from that machine was much to be preferred if the alternative were one of his hand-tooled messages. Charitably put, his handwriting was abominable. Often taken as a sort of friendly challenge by baffled readers, it was an odd mix of tiny script and lettering that issued with astonishing rapidity from his pen, appearing as runes rather than normal characters. Even his wife Kitty and long-time department secretary Norma Reno had deciphering problems. They once clipped a passage from a letter he wrote, mailing the words back to him for a translation; he was completely stumped, but quickly pointed out that he couldn't be expected to "recognize those words out of context." In a letter Ian once wrote to me while riding on a train, the word "confidential" was all I could recognize at first reading; he had little cause to worry about leaks on that one!

The knack for combining competition and fun was a Campbell hallmark appreciated by many generations of students. With a cup of coffee or a soft drink at stake, for example, Ian was continually awesome at tossing darts and rolling pennies in semi-dark basement rooms where the Caltech rock collections were stored. And in the field, no wise person tried to compete seriously with him at identifying minerals or at tossing stones into rodent holes from seemingly impossible distances. Among the more formalized contests that he organized, the Microscopic Sweepstakes probably are best remembered by geologists who were trained at Caltech. Conceived as a means for lessening the tedium of quantitative model analysis of rocks under the microscope, this annual competition yielded a long series of winners (and losers), among them several of today's most distinguished geoscientists. It was regularly staged in parallel with a contest for fashioning hand specimens of any rock type to exciting specifications of dimensions and appearance. All participants in these two required events were treated to an elaborate awards ceremony during a garden party at the Campbell home. That home, incidentally, vibrated with happy gatherings many times each year; specially enjoyed was an annual Christmas party for the entire department and a back-bench-for-successful Ph.D. candidates each spring.

World War II prompted Ian's entry into a new area of action, beginning with membership on Selective Service Board 190 in 1940. He contributed six years of characteristically painstaking effort to this tough assignment, after which he served another eleven years as Chairman of Board 92. He acquired an intimate knowledge of the selective service system, and he applied it with penetrating insight on behalf of hundreds of young people. Judging among many deferment requests under the pressure of imposed draft quotas was a particularly difficult task that involved agonizing decisions for this sensitive and sympathetic man, but he handled it with quiet proficiency.

After participating with Caltech colleagues in a Pasadena-based wartime project, Ian lent his talents to the University of California—U.S. Navy Radio and Sound Laboratory in San Diego. There he served as Senior Training Engineer and senior member of the Editorial Section, (Division of War Research, from 1944 to 1946, with a 1945 assignment to Seattle as Field Engineer for the Bureau of Ships, U.S. Navy. He found much of interest in this work, especially with the developing applications of sonar technology to antisubmarine warfare, but he was happy to return to Pasadena after the end of hostilities. Long-distance commuting at irregular intervals had become wearisome, and there now was much to be done in the Division of the Geological Sciences at Caltech. Faculty replacements were needed, an influx of new and returning students required attention, and it was a time for considering fundamental changes of direction.

His return to full-time academic work plunged Ian into a spate of activities that gradually evolved along altered lines. To be sure, his teaching continued with customary emphasis on petrology and the industrial minerals, he resumed modest consulting work in economic and engineering geology, and he retained his commitment to the completion of research started earlier. But he had by now realized that neither the 24-hour day nor his own remarkable energies could accommodate all the operations that appealed to him. This resulted in a conscious and genuinely humble decision, made with Kitty's help, to shape the remainder of his career along "people-oriented" lines. Thus geology lost a competent researcher but retained an active scholar, an able teacher, and an increasingly influential statesman. Departmental colleagues were served by Ian in measures not possible to fully appreciate, for he assumed a growing role in countless operational matters. And his students continued to benefit from his friendship, his always sympathetic ear for their concerns, his thoughtful advice, and his direct help on many fronts. Not a few of them admitted to having elected geology as their major because of Ian's influence, or to having chosen Caltech for graduate work because of a long personal letter from this remarkable man. Later, sometimes years later, they were to discover the enduring nature of his ties with them, most commonly expressed as an unexpected suggestion for new employment, a recommendation for membership in a professional or scientific society, or a letter with a bit of personally pertinent news. Somehow he always kept in touch, and we were always impressed by his ability to stand up, in an alumni gathering at a geological meeting, and introduce each attending person by name and affiliation.

Following lengthy duty as Associate Chairman of the Division and a brief time as Acting Chairman, Ian was named Executive Officer in 1952. He had been promoted to the rank of Professor in 1946. He received a courtesy appointment as Research Associate in 1959, and he was awarded the title Professor Emeritus in 1970.

Another turning point in Ian's career came in 1959 when he left Caltech to succeed Olaf P. Jenkins as California's State Mineralogist and Chief, State Division of Mines. Two years later his title was changed, through his own instigation, to State Geologist and Chief, Division of Mines and Geology. The move to San Francisco was a wrenching one,

as he had become deeply rooted in Caltech ground, but he smilingly observed that it put him a bit closer to his beloved Oregon.

Certainly Ian's new position presented its own set of responsibilities and challenges, to which he immediately applied himself. Recognizing that his predecessor had built an organization of great value to the people of California, he maintained already-established emphases on geologic mapping and a strong program of publication. He also encouraged the development of new programs in geophysics and geochemistry while initiating, with a nice sense for the future, a major program focused on geologic hazards in the State. He soon learned his way around the halls of Sacramento, where he supported the introduction of useful new legislation and was successful in obtaining the appropriations needed by his growing organization. His integrity and candor won him many friends on the capital scene, even though a few people there expressed mild concern over his academic background. Perhaps those worries were unaware of the carefully developed balance among the activities of the Division of Mines and Geology and of the enhanced national stature that the Division was enjoying from Ian's presence and actions as Chief.

The Division staff felt the Campbell touch in many positive ways. They were treated as professionals capable of independent work at their respective levels of responsibility. According to Gordon B. Oakeshott, Deputy Chief in those times, all "the geologists had the same working hours, the same responsibilities to work independently in field and office, the same privileges, and the same individual initiative with wide latitude in handling their professional assignments." This policy, long advocated by Oakeshott and strongly backed by Campbell, was not sustained without some difficulties in "bending State Government's rather rigid personnel regulations." Ian expected competent and conscientious performance from his staff, and that is what generally was delivered. He was quick and warm in his praise, and gently penetrating in his criticism of project progress and completed work. As Oakeshott put it, "Through Ian's kind and thoughtful words, we usually knew when we had been criticized and what the problem was! On the rare occasions when it was necessary to take disciplinary action, he did so with the greatest reluctance." Small wonder that the "Campbell Decade" was a period of pleasant productivity for the Division.

Ian served for a few months in 1966–1967 as Director of the State Department of Conservation before returning to the Division of Mines and Geology and his post as State Geologist. In 1969 he reached the statutory retirement age of 70 and entered a decade in which his activity level seemed to diminish not at all. For eight years he remained busy in serving many organizations, undertook several consulting assignments, and enjoyed, with Kitty, some foreign travel.

During these later years, the California Academy of Sciences played an increasingly important role in Ian's life. He was a member of the Board of Trustees from 1960 to 1976, served as Secretary in 1970 and 1971, and was President of the Academy from 1971 to 1975. In 1969 he was made a Research Associate in Geology, and upon his retirement as State Geologist he moved his desk, library, and various memorabilia to the Academy. The geology group there was highly congenial, and he was a warmly welcomed addition. Meetings of the "lunch bunch" in the Instrument Shop were lively and stimulating affairs to which Ian contributed in his inimitable way. Through this and other elements of his Academy association, his retirement years were made both happy and productive.

Ian Campbell's impact on his fellow man cannot be fully understood or appreciated without some note of his organizational and public services. This man was a born "joiner," but by no means an ordinary one. As he saw it, an affiliation committed him to

strongly active involvement and to leadership wherever it was needed and he could contribute to it. Thus he served on literally hundreds of committees and rose through series of "chairs" in many organizations. That his unselfish services were widely recognized and valued was indicated by his election to the presidency of the Pacific Division, American Association for the Advancement of Science in 1978; of the American Geological Institute in 1961; of the Mineralogical Society of America in 1962; of the Association of American State Geologists in 1965; and of the Geological Society of America in 1968. He was otherwise honored in 1962 with the Hal W. Hurlburt Award of the American Institute of Mining, Metallurgical, and Petroleum Engineers; in 1969 with the Scholarship Foundation Award of the American Federation of Mineralogical Societies; in 1970 with the Ben H. Parker Award of the American Institute of Professional Geologists; in 1973 with the Public Service Award of the American Association of Petroleum Geologists; and over the years with honorary life memberships in the A.A.P.G., the Association of Engineering Geologists, the Pacific Mineral Society, and the Society of Mining Engineers. He was a delegate to the Fifteenth International Geological Congress in London in 1948, to the Twenty-first Congress in Copenhagen in 1960, to the Twenty-third Congress in Prague in 1968, and to the Twenty-fifth Congress in Sydney, Australia, in 1976.

In addition to the organizations already noted, Ian was a member of the American Association of University Professors (National Council, 1957–1960), the American Geophysical Union, the Association of Geology Teachers, the Branner Geological Society (President, 1938) and its northern California counterpart, the Le Conte Geological Society (President, 1963–1964), the Geochemical Society, the International Union of Geological Sciences, Phi Beta Kappa, and the Society of the Sigma Xi. He also served on the Advisory Committee for the Institute of Marine Resources, University of California; on the U.S. National Committee for Geology; and on the Visiting Committee for the Geological Sciences at Harvard University for eight years (Chairman, 1975–1978). Governmental groups in which he worked included the Federal Committee on Surface Mining and (in California) the Advisory Committee on Geologic Names and the State Geothermal Resources Board. He was appointed as a charter member of California's Board of Registration for Geologists by Governor Ronald Reagan in 1969, and he served as president of that Board from 1972 to 1974. In less technical contexts, he was a member of the Athloneum at Caltech, the Commonwealth Club and Engineers Club in San Francisco, and the Masonic Order. He was a Unitarian and a member of the Layman's League.

Ian's personal influence reached well beyond his professional affiliations. He was, above all, a very able, strong, and deeply caring man with astonishing resilience. He was a quiet leader and a gifted problem solver whose advice and help were widely sought and unselfishly given. He carried on a prodigious correspondence that was rich in personal warmth, humor, and interesting ideas, and he was recognized by all who encountered him as a man of rare wisdom and sincerity. Perhaps his overriding characteristic was an undeviatingly optimistic view of others: in the words of one of his earliest students, "Ian believes in a world inhabited only by good guys!" On occasion he could disagree strongly with others, but never disagreeably, and he was always the master at persistent persuasion. His finely honed sense of whether to push, to compromise, or to withdraw resulted in many a solution to apparently insoluble problems. Thus it was he who rescued the proposed program for registration of geologists in California from almost certain fumbling through last-hour persuasion of others to adopt a united view on this vital matter. Too, his tireless efforts in the marshalling and eloquent delivery of sound arguments carried the day for several worthy changes in operations of the Geological Society of

America, including adoption of informal dress at the Annual Dinner and a much-needed move of Society Headquarters from New York City to Boulder, Colorado.

Ian Campbell is survived by his wife Catherine C. Campbell of San Francisco; his son Dugald of Whittier, California; two grandchildren, Michael and Denise; and a host of friends who remember him as a great and good man. The Division of Geological and Planetary Sciences at Caltech is establishing a Graduate Fellowship in Petrology in his memory, and the American Geological Institute has established the Ian Campbell Medal, appropriately to be awarded "in recognition of singular performance in and contribution to the profession of geology."

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MEMORIALS



IAN CAMPBELL
(1899-1978)

"For dedicated achievement by a geologist in distinguished public service." So reads the AAPG Public Service Award given to Ian Campbell in 1973, aptly and succinctly crediting his lifetime of warm, personal service to his geological peers. The American Institute of Mining, Metallurgical, and Petroleum Engineers in 1962 expressed it well: "... eminent scientist, author, educator, and administrator, and for his personal warmth, outstanding leadership, and devoted service to the profession."

One of the most widely known of the geologists of our times, Ian Campbell died of cancer in San Francisco on February 11, 1978, at the age of 78. He was first stricken by cancer in 1965 but, after months of severe but successful treatments, he enjoyed 12 years of remission. In the fall of 1977 a massive recurrence brought, mercifully, only a short period of critical illness, and he spent only his last days in the hospital.

Ian's lifelong specialty was petrology but, in 50 years, he made distinguished contributions and attained outstanding recognition in teaching, industrial minerals, mineralogy, and engineering geology. He never considered himself a petroleum geologist, but his contributions in that area were many and basic. As a graduate student, he spent a season with the Wisconsin State Geological Sur-

vay and, during the period 1924-30, he engaged in a variety of academic and industrial activities, including work for the old Vacuum Oil Co., Texas Co., Standard Oil Co. of California, and several others. Part of that work was in the laboratory in the late 1920s where he applied his training in mineralogy and petrology to the study of heavy minerals as an aid to correlation.

Ian completed 50 years as a member of AAPG in 1976. In 1962 he served as chairman of the Matson Award Committee. He was chairman of the California Committee on Preservation of Cores and Samples for several years from 1966, and also was chairman of the AAPG's Geological Highway Map Committee in 1969. He was made an honorary member of AAPG Pacific Section in 1969.

Ian Campbell was born in Bismarck, North Dakota, of Scottish ancestry. Throughout his life he was very proud of his Gaelic origins and always enjoyed his breakfast porridge, bagpipe "music," and Scotch whisky—the peatier, the better! Anyone named "Mac" was an immediate friend.

As a boy of 17, he volunteered for military service in World War I and was sent to France where he served as a wagoner in the 361st Ambulance Co., 91st Division of the AEF, 1917-19. Here we record the first example of a lifetime love of competitive fun and offbeat sports related to the sense of humor he applied to normalize many difficult situations. He became "racehorse rummy" champion of the 361st. In the 1920s, he received a bronze medal from Harley-Davidson for a solo motorcycle trip from Portland, Oregon, to Portland, Maine.

In later years, on many occasions, I have seen Ian "blunt an antagonistic confrontation" by apt application of his sense of humor and tact. A notable example occurred in the 1960s, during the critical days of consideration of legislation for registration of geologists in California. Typically, the geologic profession was seriously divided on details, and legislators told our committees that the bill would not be introduced unless the profession could present a united front. By phone calls, committee meetings, and letters, Ian persuaded the warring factions to a compromise, and a bill was successfully sponsored by the late Assemblyman William Ketchum. When the Board for Registration of Geologists was set up, Ian was appointed a member and soon became its president.

1977

Ian Campbell's association with military service did not end with World War I. He served on Selective Service Board 190 from 1940 to 1946 and was chairman of Board 192 from 1948 to 1959. He also held part-time appointments—working on mineral commodities with the Carnegie Institution of Washington and the U.S. Geological Survey and with the University of California's Division of War Research at the Navy Radio and Sound Laboratory at San Diego.

Although born in North Dakota, Ian early became an Oregonian and maintained an active loyalty to that state for the rest of his life. The University of Oregon gave him a bachelor's degree in geology in 1922 and a master's degree in 1924. He became a University Fellow at Northwestern University in 1924 and was an assistant professor of geology at Louisiana State University, 1925-28, where again he made lifelong friendships. He then moved to Harvard, 1928-31, where he was part-time instructor in mineralogy, receiving the doctoral degree in geology in 1931.

It was in 1930 that Ian met and married Catherine (Kitty) Chase, a Radcliffe girl. Catherine also received the doctoral degree in geology, and was for 15 years technical editor-in-charge for the U.S. Navy at Pasadena. Ian and Kitty traveled extensively—always on geologically oriented trips—during their 47 years together.

I first met Ian in 1931 when, as a newly appointed assistant professor in petrology, he gave his first public lecture at the California Institute of Technology on his petrologic work on Archean rocks in the Grand Canyon. Campbell stayed at Cal Tech for 28 highly productive years, 1931-59. He was an outstanding teacher of petrology, mineralogy, field geology, and economic geology—with emphasis on industrial minerals—who became known and loved by hundreds of students who received their basic training in geology from him and in that process were impressed by his personal interest and appreciation of their problems. Ian never failed to help a student or a colleague, or refused to serve his profession on a committee. Many of his students, whose careers he followed with intense interest, became lifelong friends. He advanced through the academic chairs to professor by 1946 and retained the courtesy title of research associate after leaving Cal Tech in 1959. He was executive officer of the department in 1951-52. In addition to teaching, counseling, and part-time appointments, he was engaged in a multitude of professional activities.

Ian's services as a consultant were constantly in demand throughout his graduate and Cal Tech years. He worked in petroleum geology, economic geology, and in "engineering" and "environmen-

tal" geology before these last two terms were in general use.

An understanding teacher, a competent geologist in every field in which he chose to work, and a good writer and talented speaker, Campbell could have been a good research worker. However, he was people-oriented and research and publication had to take lower priorities. Top priority went to his professional associations, his deep involvement in most of our geologic societies, public service at the local, state, and national level, and personal contracts and prodigious correspondence with hundreds of geologists. He never failed to answer a letter—sometimes to his sorrow.

By 1957, Campbell was actively and publicly supporting efforts of the California Division of Mines to inaugurate programs in geochemistry and geophysics. He was appointed State Mineralogist, Chief, Division of Mines, in January 1959. A reorganization of state government in October 1961 renamed the division, the Division of Mines and Geology and named its chief, "State Geologist, Chief, Division of Mines and Geology." The Division was placed in the Department of Conservation and that, in turn, in the new Resources Agency. Thus, Ian was the last "State Mineralogist" and became California's third State Geologist.

Ian's handwriting was execrable—tiny, cramped, illegible. For one who wrote reams of "memos" and sent hundreds of postcards when he was away from the office, this was unfortunate. I could never do anything about his handwriting, but he often called on me to fill in detailed data for his speeches. I tried to remove the "Campbellisms" (such as parenthetical phrases) but he didn't always accept corrections that might affect his style. Typical was his unique 1968 presidential address to the Geological Society of America, "Mene, Mene, Tekel Upharsin," a text from Daniel 5. The introductory part of his talk (delivered in Spanish as bad as his handwriting) was received appreciatively, nevertheless, by our Mexican colleagues. Another surprise at that GSA meeting came when Ian appeared at the head table in a plain, dark suit and tie, thus breaking away from the long-standing tradition of formal dress at GSA—a break long overdue!

On Ian's statutory retirement in late 1969 at age 70 the civil service position became a "career executive" appointment. For about 6 months (September 1966 to February 1967), Campbell served as Director of the Department of Conservation.

Ian encouraged and expected high levels of scientific competence in his geologic staff and it was

Memorials

1979

his delight to criticize constructively and to praise good performance. Through Ian's kind and thoughtful words, we usually knew when we had been criticized and what the problem was!

During the decade he was with the State Division of Mines and Geology, he reaped the awards and honors due a lifetime of service to the profession. He was president of four major national societies: Geological Society of America, 1968; Mineralogical Society of America, 1962; Association of American State Geologists, 1965-66; and American Geological Institute, 1961. Unquestionably his selection as president of GSA was the highlight of his career.

During the period 1959-69 he also served in various capacities with numerous societies, including the AIME, AAUP, International Union of Geological Sciences, Le Conte Geological Society, Pacific Mineral Society, and California Academy of Sciences, and with governmental agencies, including the California State Geothermal Resources Board, California Board of Registration for Geologists, and the Committee on Geological Sciences of the National Academy of Sciences-National Research Council. Amazingly, each job he tackled was a thorough and conscientious one.

From the perspective of a few years, and from my close personal association with seven chiefs of the California Division of Mines, I would summarize his accomplishments in this way:

1. He started the Division's major program, "Geologic Hazards," with an experimental program on urban geologic mapping with Los Angeles and San Diego, shortly after coming to the Division.
2. He led in introducing helpful legislation, including the name changes from Division of Mines to Division of Mines and Geology and State Mineralogist to State Geologist; establishing an official State rock (serpentine), State mineral (gold), State fossil (sabre-toothed tiger); and he led the fight to enhance the status of geologists through registration.
3. He pushed the early development of Division programs in geophysics and in geochemistry, including a State Bouguer anomaly map on the 250,000-scale geologic base.
4. Perhaps his most important contribution was that he enhanced the reputation and status of the California Division of Mines and Geology at Sacramento and nationally by just being Ian Campbell!

In memory of Professor Ian Campbell, The Division of Geological and Planetary Sciences at California Institute of Technology has established a Graduate Fellowship in Petrology. An endow-

ment fund to support the fellowship is being sought, and contributions in his memory are invited. The American Geological Institute has set up an Ian Campbell Scholarship Fund to which all geologic scientists are invited to contribute.

Ian Campbell leaves his wife, Catherine C. Campbell of San Francisco; son, Dugald, of Whittier; sister, Flora Houck, of Palo Alto; and two grandchildren, Michael and Denise.

Ian Campbell's greatest joy was in service to his fellow geoscientists, and his greatest reward was in the plaudits and honors conferred upon him by his peers.

GORDON B. OAKESHOTT

Oakland, California

June 1979

Recollections of Ian Campbell

by ROBERT P. SHARP



Ian Campbell passed gently from this earthly scene at the age of 78 on February 11, 1978, in San Francisco, a victim of a quiet but valiant fight with cancer over a dozen years. Others will write of his awards and professional accomplishments during 28 years as professor and administrator at Caltech and a decade as State Geologist and head of the California

Division of Mines and Geology, and of his stewardship of countless committees, his leadership of professional societies, and his many, many public services. My aim here is to illuminate some aspects of his character by means of personal recollections and observations.

We arrived at Caltech at about the same time, but in totally different

capacities, he in 1931 as a new assistant professor in Geology and I in 1930 as a freshman. It was one of the pleasures of my life to have been his student and eventually his close friend and colleague during the succeeding 48 years.

Ian's outstanding characteristic was his warm, unselfish, devoted service to others. This trait surfaced early when,

presumably by being a little vague about age, he was able to enlist in World War I and saw duty with the 361st Ambulance Company of the 91st Division along the northern front in France and Belgium. He must have been barely 18 when the armistice was signed—an event at which he was present and by which he was deeply impressed. Down inside Ian was a much freer spirit than his usually decorous conduct would suggest. As a young man he loved motorcycling and the free openness of that mode of travel. The Harley-Davidson Company once awarded him a medal for traveling by motorcycle from Portland, Oregon, to Portland, Maine.

When he and his wife, Kitty, a professional geologist in her own right, first came to Pasadena, they lived in a small backyard house just north of the Huntington Hospital. I had a particular fondness for the student nurses of that hospital in those days, so I had occasional first-hand reports on Dr. Campbell's conduct. My informants told me that during the 1933 Long Beach earthquake Ian ran shouting from his house, not in fear but with excitement over the occurrence of this powerful natural phenomenon and its scientific implications.

Ian Campbell *californicus*, an appellation affectionately bestowed by one of his close faculty associates, was an incorrect designation. It should have been Ian Campbell *oregonensis*, for he was an out-and-out Oregonian. Ian grew up in the state and loved every aspect of it, passionately. I once aroused his ire, during a fall-season trip through Oregon, by asking if the red berries on a mountain ash were Oregon cherries. He let me know in no uncertain terms that Oregon cherries were at least three times larger and twice as red, besides being deliciously edible. His father, Dugald, was an early cherry grower in the Eugene area. Ian had friends and friendships all over the world, but some of his warmest relationships were

based on early Oregon associations.

Ian was an indefatigable letter writer, often with multiple copies to all concerned. Legions of graduate students with degrees in geology from Caltech will tell you emphatically that the sole reason they came to Caltech was a letter from Dr. Campbell. Each missive was a highly personal, carefully crafted effort that completely outclassed the form letters of other colleges and universities. Students were one of his prime concerns. Once they were admitted to Caltech, he taught them well and ministered to their other extracurricular needs with care and devotion. No one could handle the problems of draft deferment more expeditiously, yet wholly properly, than draft-board member Campbell. He knew the system inside-out from work on Selective Service Board 190 from 1940 to 1946, and his chairmanship of Board 92 from 1948 to 1959. He always provided a sympathetic ear to other student woes and problems and was unusual in his follow-up action on such matters.

One of the problems about the many Campbell letters and notes was the atrocious handwriting. It is reputed that only two people in the world could really read it, Norna Reno, long-time secretary of the Caltech Geology Division, and wife, Kitty. Even Kitty sometimes had trouble. One summer my wife, Jean, motored from the Midwest with Kitty and young son Dugald. Ian was somewhere abroad, as I recall. Each evening on the trip Kitty would take out Ian's latest letter to puzzle over a few remaining undeciphered words just to be sure she wasn't failing to act upon some request Ian had made. Most of us could generally make out the main gist of a Campbell note, but we were often unsure as to whether we were to go or stay, turn right or left, or do nothing. Fortunately Ian used a typewriter whenever possible.

One discipline I learned from Ian was to write postcards while waiting to be served at a roadside cafe during

travels. He always had a shirt-pocket full of cards: they were a penny each in those days and obviously appealed to his Scottish sense of thrift, and to mine too. I have often speculated about the greater pleasure experienced by recipients of Ian's cards, as they slowly and haltingly unlocked the secrets of his message, compared to the casual glance given a card written in clear *handscript*. People are fascinated by puzzles, and his cards were puzzles with infinite appeal that could be worked on for days.

The Campbell Christmas party was always one of the outstanding events of the holiday season. It came in two parts. In the late afternoon a gathering was held for staff, faculty, and old friends. The evening of the same day was devoted to the party for students. Of the two installments, one always had the sneaking suspicion that the Campbells enjoyed the student party more. After eating and drinking everything in sight and staying way beyond any reasonable hour, the students departed with a feeling that someone truly cared about them.

Ian was very good at combining fun and games with work. He enlivened the laborious, almost deadening, chore of measuring the amount of mineral phases in rock thin sections by inventing a competition known as the "micro-metric sweepstakes." The winner of this prize was announced with great flourish and high-flown oratory at the annual spring petrology party in the garden of the Campbell home on South Bonnie Avenue in Pasadena. On the same occasion the winner of the hand-specimen contest was also honored. This was Ian's contribution to the nearly lost art of fashioning decent hand specimens in the field. They were inspected with exquisite care as to shape, size, evidence of misplaced hammer blows, and sophistication of geological features represented. Many of the best of these specimens, and some were very good, repose to this day in showcases in the Arms Labora-

Ian Campbell

tory. The micrometric sweepstakes, the hand-specimen contest, and that annual petrology party linger fondly in the memory of many, many Caltech graduates.

Occasionally of a late afternoon Ian might appear at the office door of a student or faculty member with an unexpected invitation to engage in a little game of darts. In a state of wonder, the invitee followed the host to the sub-basement of Arms Laboratory, and there in all its splendor in semidarkness on the side of a rock-storage cabinet was a dartboard. Few people could trim the canny Scot at his own game, throwing darts in the gloom. With sympathetic and gentle words for the stray shots of his competitor, Ian quickly demonstrated who was the better thrower.

Allied to the sense of fun was one of the more remarkable Campbell traits, that of blunting an antagonistic confrontation by illuminating the humor of the situation or turning the whole thing into a joke. While some of us might fume over the irritating actions of an associate, Ian always saw the amusing side of the affair. An irritating action became the source of a chuckle for him, which he readily shared with others. This facility must have been one of the reasons he lived long and happily.

Although conservative in dress and behavior, he was remarkably liberal in politics. One can suspect that he even occasionally voted for Norman Thomas as a way of expressing discontent with the prevailing political scene. Ian fought for various causes, large and small, with sustained ingenuity, endurance, and tact that often won the day. It was under his stewardship that the headquarters of the Geological Society of America, of which he was then president, moved from its traditional headquarters in New York City to the fresh open spaces of Boulder, Colorado. This was like opening the windows and turning on the lights in a room too long tightly closed and

shrouded in darkness. He was the innovator of many changes in the California Division of Mines (and Geology) during his tenure as State Geologist. Most Caltech gentlemen now lunching in open shirted comfort at the Athenaeum are not aware that it was the dogged, continuing effort of Ian Campbell that eventually led to the abolishment of the coat-and-tie requirement for the noon meal there. Even the matter of Dick Jahns' mustache could be a subject of Campbell advocacy; a struggle he won over formidable opposition from Dick's wife, Frances.

Ian was deeply proud of his Scottish heritage. When traveling or camping with him, you ate your breakfast porridge (oatmeal) without sugar. Sugar spoiled the taste. He welcomed the various "Macs" to Caltech with special warmth and gusto, although their ancestors may have slaughtered the Campbells in the Highlands years ago. They were, after all, Scotsmen. He saw to it that the officers of the Geological Society of America, at their annual national meeting in Los Angeles in 1954, were escorted to their places at the head table by a kilted bagpiper. It is even rumored that unearthly noises occasionally ascending from the sub-basement of Arms Laboratory came from his own bagpipes. He was a Scottish spartan in terms of his own wants, but he was generous beyond words to others.

Only once in my career was I irritated with Ian. It happened during my PhD oral examination at Harvard, and he wasn't even there. The venerable Charles Palache, professor of mineralogy, handed me a piece of paper that showed a collection of dice with various markings on their faces. He asked if I had ever seen it before, and when I said no, he was pleased. He explained it was from a quiz Dr. Campbell once gave to a class at Harvard while working as Palache's assistant. Palache then proceeded to grill me on the crystallographic symmetry elements of those

dice. I performed poorly, all the while silently cursing that diabolically clever Scotsman, Campbell.

The students, staff, and faculty at Caltech never had a truer, warmer, more devoted friend than Ian Campbell. Integrity, devotion, sincerity, good humor, patience, tolerance, compassion, kindness, humility, and industry are all words that come to mind when one thinks of the man. Generations of Caltech students will remember him as the one who made the rigors of a Caltech education not only bearable but an enriching experience. In Ian's own words, "There are many ways to serve," and in my words, "Ian Campbell exercised more of those ways than any other person I have ever known." He loved his fellow beings, and in turn was deeply beloved and respected by them. □

The Ian Campbell Graduate Fellowship in Petrology

In memory of Professor Ian Campbell, the Division of Geological and Planetary Sciences has taken the initial steps to establish an Ian Campbell Graduate Fellowship in Petrology, which will enable us to provide support for students concentrating their work in the broad area of geological sciences that Ian so ably fostered at Caltech and that remains a central field of research and study in the Division. An endowment fund to support the fellowship is being sought, and contributions in Ian's memory are invited.

Barclay Kamb, *Chairman*
Division of Geological
and Planetary Sciences

The Role of State Governments in Urban Geology

By Ian Campbell,*
State Geologist of California
and Chief, Division of Mines and
Geology, San Francisco, California

Currently, in the United States
as a whole, there is more geology
to be done than there are
competent geologists to do it.

... the studies of a Federal
agency can and should be
broad gauge and long range.

Once before—the occasion was the annual meeting a few years ago of the Small Miners Association, held on a hot day in late summer at the Tropico Mine in the Mojave Desert—it was my privilege to be on the same program with Hollis Dole. Ever since, I have known that his is "a hard act to follow!" Nevertheless, I deem it an even greater privilege to be on this panel with him today—greater not only because of the important post Hollis now fills, but also because of the larger and perhaps more sophisticated audience here to participate with us in surroundings more conducive to easy discussion than the wind-blown Mojave.

To provide inspiration for my comments, let me give you two "readings from the American Scriptures." The first is that statement, commonly attributed to Abraham Lincoln: "Government should do only those things that the people unaided cannot or will not do for themselves." The second is from Ben Franklin: "The Lord helps those who help themselves." On reflection, I think you will readily see that the role of State government must lie somewhere between those two sterling admonitions. Thus it is that in some situations there is a wide gap and a large role for the State, while in other situations the gap could conceivably be narrowed almost to the vanishing point.

Currently, in the United States as a whole, there is more geological work to be done than competent geologists to do it. Hence conflicts of interest should be at a minimum, and those which exist should be readily resolvable through a review of the facts by those most concerned. Let me use the situation in California as a good example of the role of the State, not only because it is the situation with which I am most familiar but also because—far more than in most states—there is a relatively large involvement in the geology of the State on the part of the Federal, State,

and local governments and the private sector.

First, let us recall the lines of demarcation—perhaps I should say guidelines—that have determined what would be done by the U.S. Geological Survey on the one hand, and the State Division of Mines and Geology on the other. In earlier times, the interests of both organizations were primarily in mineral resources. In general, the Federal studies were directed to metalliferous ore deposits, perhaps because they provided materials that entered widely into interstate and international commerce. The State, for its part, was more concerned with the nonmetals because they were produced primarily for local consumption. To be sure, exceptions could be cited. At one time, practically all of California's substantial mercury production was consumed within the State by the gold-mining industry. And borax, a distinctive nonmetal, has almost from its initial discovery been a material of international trade and export. Nor have all U.S. Geological Survey investigations been confined to metals or the State's to nonmetals, although the generalized concept provided a rather commonly observed guideline.

In more recent times, a decreasing emphasis on minerals and an increasing emphasis on geologic mapping and topical studies has caused guidelines to become more tenuous. Nevertheless, by exchange of current and proposed project and assignment lists, distribution of effort has been rather successful, and potential for conflict of interest has been recognized soon enough so that it has been possible satisfactorily to resolve such cases virtually "on the ground."

Distribution of effort has been largely on a geographic and a somewhat opportunistic pattern. Thus the U.S. Geological Survey has had its "lemming projects," resulting in blocks of continuous mapping across the northwestern part of the State and across the Sierra Nevada.

*Currently, Research Associate, California Academy of Sciences, Golden Gate Park, San Francisco, Calif.

The State, in its publications, has followed what some have felt was a completely random pattern, although in reality it was designed to provide California taxpayers a maximum coverage for minimum expenditure. The State was, to a large degree, utilizing the excellent but somewhat sporadic input from university theses and faculty investigations. Still more recently, and in what is often referred to as "urban mapping"—for example, in Los Angeles County where the County Engineer has provided support and a clearing-house for distribution of effort—the U.S. Geological Survey has taken the responsibility for the Santa Monica Mountains and the State for the San Gabriels and other parts of the county. And as long as there is more than enough to be done and not enough people to do it, we can continue to resolve successfully at the local level such problems as may arise, on what is essentially a geographic basis. But the time will come when more clear-cut guiding principles should be developed.

One principle that has long been implicit, though rarely announced explicitly, is that in a well-functioning democracy (or republic) those legislators with the greatest vision, broadest objectives, and most profound wisdom will find their way to the top seats in government. Consequently, the studies of a Federal agency can and should be broad-gauge and long-range: What is the origin of serpentine? How far down is the Moho? What is the age of the Pacific basin? A Federal Congressman should be sufficiently far-sighted to see that the answers to these questions will eventually be important to the Nation, and wise enough to know that the answers cannot be forthcoming tomorrow, or next year, or even the year after that.

Conversely, a City Councilman, beset as he is by problems that his neighbors bring to his doorstep, feels that if a developer (especially one who has contributed to his

election campaign) wants to know if it is all right to build on a certain hillside site—and if not, why not—an answer should be forthcoming from the City Geologist or City Engineer tomorrow if possible, and certainly not later than next week!

The moral of these realities of life is that long-range studies and basic research investigations should be the special province of the Federal Government. Moreover, since it is in this field that American scientific effort (in contrast to European) is most often short-changed, it is here that the Federal effort should largely be concentrated, however tempting it may be to harvest political hay by garnering a one-season crop from an influential constituent's favorite acre.

When cities and counties have had the forethought to set up a geologic staff, that is where day-to-day problems should be faced. It is also where, it must be hoped, there will be sufficient staff and the opportunity to plan ahead and to map enough of the area's geology so that planners, zoning authorities, and developers may obtain the necessary information *before* the fact, and not after—as has, alas, too often been the case.

If I have digressed from a discussion of the role of the State, it is only that the State's role so obviously lies between that of the Federal Government and that of local government. To use a mining analogy, it is by defining the hanging wall and the foot wall that the size and the course of a vein can be most easily determined. The role of the State is indeed something like that of a middleman. A middleman fills in where needed and as he sees the need. He must guide and persuade the wholesaler, on the one hand, and educate and respond to the needs of retailer and consumer on the other. The Federal Government cannot possibly scrutinize the geology of every State in sufficient detail to deter-



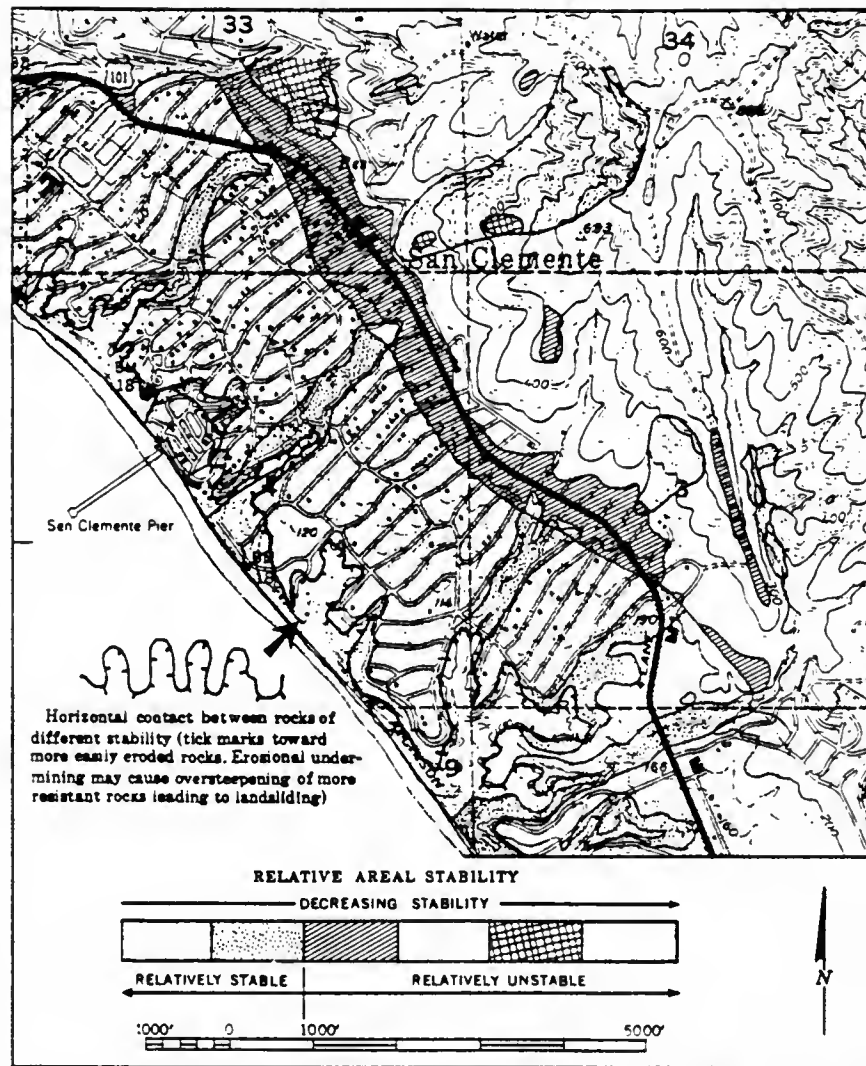
IAN CAMPBELL

Ian Campbell graduated from the University of Oregon with an A.B. degree in geology in 1922 and received his Ph.D. from Harvard University in 1931. From 1931 to 1959 he served on the faculty of the Division of Geological Sciences at the California Institute of Technology and held appointments with the Carnegie Institute of Washington, the U.S. Geological Survey, and the University of California's Division of War Research at the Navy Radio and Sound Laboratory at San Diego. From 1959 until his retirement in 1969, Dr. Campbell was state geologist of California and chief of the Division of Mines and Geology. He has received many awards and has held national office in many professional organizations. In 1967-68 he was president of the Geological Society of America. In 1969, Governor Reagan appointed him to the newly created California Board of Registration for Geologists.

When cities and counties have had the forethought to set up a geologic staff, that is where day-to-day problems should be faced.

mine where geologic work within that State should be concentrated. This, then, is part of the State's job: to determine priorities, guide the efforts, and coordinate the results of geologic work—results, incidentally, that may come not only from Federal efforts but from local government, colleges and universities, private industry, and even from a few qualified amateurs and a few dedicated professionals who from time to time undertake a "postman's holiday" simply because they love "getting color onto the map." The State is peculiarly well situated to undertake coordination and stimulation of all such efforts. I can point (and I don't mind saying, "point with considerable pride") to the 27-sheet, 1:250,000-scale State Geologic Map of California, just now nearing completion, as a fine example of exactly this kind of thing.

Local government in California, particularly southern California, has gone farther than in most states toward establishing competent geologic organizations at the city and county levels. But woefully few cities and counties, even in California, have taken this important step. Consequently the State—looking now to the other side of our "vein"—has to fill this gap. In California we have been trying to do this, not by doing all or even a small portion of what needs to be done, but by setting up in selected areas what we sometimes refer to as "demonstration plots." On these plots we hope to demonstrate to local government (particularly planning staffs), consulting geologists, and citizens in general the benefits they may all derive from a well-executed, informative geologic map that is available well in advance of urbanization. Our Division's SR-98—"Natural Slope Stability as Related to Geology, San Clemente Area"—is a recent example. Figures 1, 2A, and 2B are taken from this report. I must also cite a current circular (No. 483) of the Illinois State Geo-



logical Survey, "Geology for Planning in McHenry County," as another excellent example of this kind of approach.

If these demonstration plots take hold, and cities and counties develop their own geologic staffs, the State can devote more time to things that—on a State-wide basis—need very much to be done. For example, what are the principal factors that influence coastal erosion in California? What are the slope stability characteristics of the Monterey Formation, and how do they change through the State? What are the patterns or cycles of fault movements in the State? Answers to questions such as these will eventually speed the work of city and county geologists and pri-

Figure 1.—Relative areal stability map of a portion of the San Clemente area, based upon geologic mapping by R. P. Blank and G. B. Cleveland, 1962-63

Figure 2.—Before (a) and after (b) photos of an area mapped as unstable (indicated by the arrow on fig. 1). In comparing the two photographs, it should be noted that (a) was taken from ground level, well below the doomed house; whereas (b) is an oblique air photo, taken from well above

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vate consultants and will make it more assured and more economical.

Whether it be through State-wide projects or local demonstration plots, the State has an important role to fill in setting standards. Preferably, it will set them, not through legal requirements, but by furnishing examples of excellence to provide a guide for those who may be working in a degree of isolation which affords them little or no guidance, or stimulus of comparison. Those of you who are California residents must be aware of the important role played by the State Board of Equalization. It provides guidelines and seeks to bring about such things as equalization of taxes and comparable standards of performance on the part of county assessors. A State geological survey has a similar role to play in its own special field, as does the U.S. Geological Survey at the national level. It is, in fact, through this kind of work that such grotesqueries as the state-line faults that were to be found on maps of a generation or more ago have been virtually eliminated.

Another—in this case well-defined—role of the State that bears on these matters is its role in education, especially higher education. To discuss this topic adequately would require another panel and another day. It must suffice here to point out that the State has an obligation through its universities to provide well-staffed earth science departments concerned both with the training of students and with promulgation of research. Additionally, the State should show a greater concern about educating its younger citizens in the facts of life, including (in California, I should say *emphasizing*) "geology in the urban environment." Without such education there will never be acceptance, much less full utilization, of the facts of geology as developed and presented through the effort of all levels of government and the private sector. We look to the State

for training of scientists; we must look to it also for educating the layman.

A very important, although as yet little-recognized role that State government can fill to particular advantage is that of bringing ecological concepts into all aspects of urban geology. I do not need to stress to this audience the importance of ecology in all present and future planning and programming. The State is in a most favorable position to utilize effectively the many inputs from agencies that can and should contribute. The Federal Government, however well-intentioned toward ecological planning its various bureaus may be, is handicapped by the sheer size and ponderousness of its operations, to say nothing of the isolation from one another that size alone imposes on agencies. Local government is beset by local pride and partisanship, by immediate needs, and by a resultant lack of objectivity in reaching major decisions. State government, by virtue of the middle ground it occupies, is the place where ecological concepts can best be developed *and* brought to bear. State bureaus are not too large for effective interchange of information among units at the working level and influential input from these to the decision-making level. State government also is sufficiently removed from the exigencies and demands of local politics to achieve objective, long-range decisions where these are needed.

Truly then, State government has a large and very important role to play in urban geology, but it is by no means one that seeks to preempt the role of local government and the private sector on one side or of the Federal Government on the other. Rather, the State, if its role as middleman is well done, will free its partners on either side for more and better work of the kind they are best suited to do. The key, and the goal for all of us, is cooperation, not competition. ■

We look to the State for training of scientists; we must look to it also for educating the layman.

State government, by virtue of the middle ground it occupies, is the place where ecological concepts can best be developed *and* brought to bear.

WS release written by Catherine Campbell for the HUD-USGS report on the proceedings
a symposium on engineering geology in which Ian Campbell participated. Most of
e editing marks are by Ian Campbell; a nice sample of their professional cooperation.

News Release

Environmental Planning and Geology
now available

①

"Thou shalt not tear up the land
Thou shalt not contaminate the water
Thou shalt not pollute the air"

But

"Thou shalt provide society with the mineral
resources it needs."

With this apt quotation from John F. O'Leary, then U.S. Director of the USGS, begins

Frank ~~these words~~ Peter T. Hawn begins his
article in the new, 204-page book prepared
cooperatively by the U.S. Department of Housing and
Urban Development and the U.S. Geological Survey.

Entitled ^{reports to the proceedings of} ~~presented at~~ "Environmental Planning and Geology", the
book ~~presented at the proceedings of~~ ^{is compiled from} a Symposium on
Engineering Geology in the Urban Environment arranged
by the Association of Engineering Geologists for ~~the~~ its
annual meeting in October 1969.

volume

The ~~book~~ consists of three main parts preceded by
a keynote Address on "Man and his Environment - The Role
of Urban Geology" by ^{Professor} Wolf E. Ellison of Stanford University; and
followed by a Concluding Address on "Environmental Planning
for Community Needs" by the Honorable Harold B. Fierman,
Assistant Secretary for Research and Technology in the Department
of Housing & Urban Development.

②

Part I of the book includes four formal papers which present a broad review of ~~the~~ geologic factors of special concern in urban areas -- hazards, natural resources, foundation conditions, and hydrology. These articles were prepared by such experts in ^{this} field as ^{the Honorable} ~~Frank E.~~ ^{Frank E.} Alaquist, Senator from the San Jose District of California; Peter T. Flawn, Vice President for Academic Affairs, University of Texas, Austin; David J. Henkel, Chairman Dept. of ^{Geol.} Technical Engineering, Cornell University, Ithaca, N. Y.; and Glenn Penns, Professor of Geology, Stanford University, Stanford, Calif.

A panel discussion, moderated by Lloyd Cluff, ^{Executive President of Woodward Clyde} and ~~an~~ ^{an} ~~such diverse disciplines as~~ ^{an} engineer, transportation specialist, an attorney, a landscape architect, a county director of public works, and an engineering consultant. The discussion was far-ranging and jointed. It covered such diverse problems as the impact of zoning on land values and taxes, responsibilities and philosophy of planners, and the need for more interdisciplinary forums.

Part II sets forth the responsibilities of geologists from various levels of government and from the private sector. The Honorable Walter M. Dale, Assistant Secretary ^{of the Interior} for Mineral Resources, writes on "The Federal Government and Urban Geology"; Don Campbell, ^{then} State Geologist of California, writes on "The Role of State Governments"; Charles Johnston, Staff Geologist for the City of Los Angeles, writes on "The Role of Local Governments"; and Frank L. Lupton, Consulting Engineering Geologist, writes on "The Role of Consulting Geologists."

A panel discussion led by Richard A. Johns, Dean of ^{The} Earth Sciences, Stanford ^{University}, focused on topics of special concern to planners and public officials. Panelists included an A B A G ^(Association of Bay Area Governments) planning director, a State senator, a H V D planner, a structural engineer, and a university professor in geography.

* Association of Bay Area Governments.

Part III of the book consists of ^{seven} ~~selected~~ papers particularly pertinent to the subject of environmental planning. For example, James Kolm of the California Division of Mines & Geology describes the increasing salinity and pollution of Salton Sea, together with ^{an} ~~a~~ method for saving this vacation area for future generations. ~~to enjoy~~ ^{the article on} a "Urban Geologic Handicaps" by George Roberts and Raymond Rice (James and Moore) acquaints nongeologists with the problems of consulting engineering geologists who work in urban areas. ^{an article by} Richard Parizek, professor of hydrology at the Pennsylvania State University describes a stress-strain concept for evaluating environmental problems in a carbonate terrain. Papers by Milan Matula, Department of Engineering, Comenius University, Bratislava, Czechoslovakia; Gerald Nicoll, Levitts, Inc.; ^{and} Maxwell Gardner and Charles Johnson of the U.S. Geological Survey present some techniques geologists use to communicate with planners, developers, and city officials. The final paper, by George Mader of William Spangler and Associates and Dwight Crowder of the U.S. Geological Survey, presents an actual case history of the effective use of geologic data in developing a town plan.

the writer
is at
a Fort.

→ [A sad commentary might be added here. Three of the authors who made these statements died before the book was written.]

Book was published. Maxwell Gardner and Charles Johnson died accidentally of carbon monoxide poisoning during a hunting trip just twelve days after the presentation of their paper. Dwight Crowder was killed in an automobile accident in April 1970.]

An ^{authorial} ~~introduction~~ by Arthur J. Zeigler of the Department of Housing & Urban Development, summarizes the salient features of a unique pilot study which will provide an analysis of the physical environmental factors affecting the development of the San Francisco Bay Area.

(6)

The format of the book is unusual in that "highlight statements" appear in bold-face type along the margins. These highlights, ^{of each page} taken together with many pertinent well-captioned illustrations, make it possible to ~~read~~ ^{leaf through} the articles ^{while readily obtaining} quickly, and get the gist of them. [If a title ^{seems to be of} particular interest it can be read in detail]. This technique, ~~as simple designed~~ ^{an expedient one} for quick reader comprehension greatly increases the value of the book. Editors were Donald B. Nichols and Catherine C. Camfield both of the U.S. Geological Survey; layout was by Carol Conroy of the Department of Housing and Urban Development.

The book may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Wash. D.C. 20402. Price \$3.75. Stock Number 2300-1195.

INDEX—Catherine Campbell

- Addams, Jane, 3
 Albers, John, 85
 Allen, Alice, 20, 66
 American Association of Petroleum Geologists [AAPG], 51, 83, 112, 129
 American Association of State Geologists [AASG], 82, 85, 87, 97
 American Association of University Professors, 61
 American Geological Institute [AGI], 81
 American Institute of Mining, Metallurgical and Petroleum Engineers [AIME], Hardinge Medal, 82
 American Institute of Professional Geologists [AIPG], 111
 Ammons, Helen, 92
 Anderson, Carl, 48
 anti-submarine rocket [ASROC], 65, 67
 Antunez, Kay, 130
 Association of Engineering Geologists [AEG], 20, 112
 Atwater, Gordon, 82, 101, 112, and Jean, 112, 122

 Bacher, Jean, 68
 Bailey, Dorothy, 92
 Balch, _____, 43
 Barbat, Bill, 107
 Bay Area Environment and Planning Studies, 113-115, 116, 120, 127
 Benioff, Hugo, 42, 48
 Berg, Joe, 110
 Bicknell, Helen, 21
 Billings, Marland, 22
 Blackwelder, Elliott, 101
 Boreta, Janet Houck, 33, 127, 133
 Boy Scouts, 59

 Bracken, Dorothy, 13
 Bradley, Philip, 78, 83, 120
 Branner Club, 51, 59
 Bretz, J Harlan, 59
 British Columbia Hydro-Electric Company, 113
 Browne, Andrew Howe, 121
 Brown, Bob, 120
 Brown, Edmund G., 101
 Brown, Harrison, 55, 72
 Bryan, Kirk, 26
 Buddington, A.F., 76
 Buwalda, Imra, 41, 69
 Buwalda, John, 41, 42, 48, 51, 56, 66

 California Academy of Sciences, 84, 107
 California Committee for Surface Mining, 87-88
 California Department of Conservation, 87
 California Division of Mines, 78, 81-83
 California Division of Mines and Geology, 83, 84-90
 California Institute of Technology, 40-52, 55-63
 Geology Club, 59
 California Registration Board for Geologists and Geophysicists, 108-109
 California State Institute of Marine Resources, 86
 Calkins, Frank, 91, 92, 96, 97-98
 Callas, Mary Louise, 93
 Campbell, Agnes Gilkison, 30-33
 Campbell, Archibald Algernon, 75
 Campbell, Catherine Chase (Mrs. Ian)
 career in Pasadena, 53-54, 64-68
 family and schooling, 1-11
 geologist and editor, USGS, 90-99
 higher education, 12-29, 38-39

- teaching at Mt. Holyoke College, 17-21
- Campbell, Denise, 132
- Campbell, Dorothy Tomlinson (Mrs. Dugald R.), 64, 132
- Campbell, Dugald, 26-27, 30-33
- Campbell, Dugald Robbins, 46, 52, 54, 63-64, 66-67, 70-72, 112, 132
- Campbell, Ian
California state geologist, 81-90
family and schooling, 30-37
professor, California Institute of Technology, 41-52, 55-63
- Campbell, Michael, 132
- Camp Fire Girls, 70
- Carnegie Institute, 47-48
- Carnegie pensions (Teachers Insurance and Annuity Association), 2
- Cerkel, David, 117
- Chase, Eliza Dixon Robbins, 3, 7-8, 16, 53
- Chase, John Hildreth, 1, 5-7, 53
- Chase, Thomas Noyes, 1
- Chesterman, Charles, 99, 107
- Childs, Orlo, 103
- Civil Service Commission, 67
- Collet, Leon, 22
- Conel, James, 61
- Court, Arthur, 110
- Cox, Allen, 95
- Curry, Mary Ann Gilkison, 31-32
- Curry, Dan, 31-32
- Cushman, Joseph, 26
- Cutsforth, Tom, 36
- Dalrymple, Brent, 95
- Daly, Reginald, 25, 26
- Davies, Godfrey, 49
- Davies, Peggy, 68, 69
- Davis, William Morris, 43
- Depression, the, 39, 42
- Dibblee, Tom, 96, 100, 101, 104-107
- digital data instrumentation, 65
- diphtheria, 4
- Doggett, Ruth (Mrs. Karl Terzaghi), 58
- Dole, Dick, 95
- Donnelly, Nick, 74
- earthquakes
Alaska (1964), 95-96
Tehachapi (1952), 66, 72
- Eckel, Edwin, 96, 98-99
- Eckerman, von, Count, 76, 100
- Eliassen, Rolf, 116
- Emerson, Benjamin K., 2, 6
- Engel, Albert, 72
- environmental geology, 120
- Etta Mine, South Dakota, 14
- Federal Energy Administration, 117-120
- Flint, Richard Foster, 51
- Focke, Helen, 14
- Foose, R.M., 76, 99
- Fraser, Horace, 26, 29, 42, 49, 51, 55
- geographic names, 88
- Geological Society of America [GSA], 16, 20-21, 50, 56, 72, 74, 87, 89, 101, 104, 110
- Gibson, Russell, 14
- Gilbert, Horace, 49, 88
- Gilkison, Janet, 31-32
- Gillson, Joseph, 76
- Gilluly, Jim, 59
- Grand Canyon geological expedition, 47-48
- Grantz, Art, 96, 113
- Gratton, L.C., 101
- Greenman, Hope Graham, 11
- Gulliver, Rachel, 115
- Gustafson, John K., 25, 26, 75
- Gustafson, Louis, 75
- Gutenberg, Beno, 42, 44, 48, 69
- Halberstadt, M., 110

- Hanna, G Dallas "Doc" and Margaret, 107
 Harley-Davidson, 34, 37
 Harvard University, Massachusetts, 23-25, 46-47, 112
 Geology Club, 26
 Hayes, Marian, 18, 23, 72
 Hedberg, Hollis and Frances, 112
 Hendricks, Tom, 12
 Henshaw, Helen (Betty, Mrs. Paul), 41
 Henshaw, Paul, 41, 99
 Hepperle, Wendy, 131
 Hewett, Foster, 79, 99, 101
 Hill, Mason, 84
 Hinche, Norman, 25
 Hodge, Edwin, 35
 Homestake Mine, South Dakota, 14
 Hocver, Linn, 125
 Houck, Catherine, 129-130
 Houck, Flora Campbell, 28, 32, 33, 34, 46, 127
 Houck, George, 36, 42, 46, 129
 Howe, Henry, 35
 Hubbard, George D., 12, 15, 20
 Hubbert, King, 101
 Huelsdonk, Lewis, 88
 Hunt, Charles, 94
 Hurlbut, Cornelius, 47, 122
 Huse, Eleanor, 69
- International Geological Congress
 Copenhagen (1960), 76, 99-100
 London (1948), 70
 Mexico City (1956), 74
 Montreal (1972), 122
 Paris (1980), 129
 Prague (1968), 102-103
 Russia (1984), 131
 Sydney (1976), 113, 125
- Jahns, Dick, 62-63, 64-65, 78
 Jenkins, Olaf, 78, 81
 Just, Evan, 101, 110
- Kamb, Barclay, 60, 75
 King, Martin Luther, 59-60
 King, Phil, 59
 Kinney, Douglas, 92
 Knight, Goodwin, 101
 Kockelman, Bill, 120
 Korean War, effect on Naval Ordnance Test Station, 66
 Krick, Irving, 53
- Lagrange, Jay, 123
 Laird, Ray, 115
 Lanphere, Marvin, 61
 Laporte, Leo, 109
 Larsen, Esper, 26
 LeConte Club, 83-84
 Legget, Robert, 101
 Liggett, Lura, 5, 8, 22
 Lindsay, George, 110
 Lobeck, A.K., 14, 16
 Louisiana State University, 35-36
 Lowenstam, Heinz, 55, 72
- MacDermatt, Esther, 91, 92
 MacGregor, John, 121
 manganese, Chewelah, Washington, 52, 59, 83
 Mather, Kirtley, 21-22, 23, 35, 59
 Maxson, John, 42, 47, 55
 Maxwell, John, 110
 McCourt, Dean, 14
 McEwan, Ailsa, 73, 74
 McGill, Jack, 85
 McIntyre, Don, 74
 McKee, Eddie, 47-48
 McLaughlin, Donald and Sylvia, 101
 Meadows, Sylvia, 18, 26-27
 Merriam, John, 48
 meteorology, 53
 Mueller, Si, 50
 Millikan, Robert, 40, 47, 48
 Mineralogical Society of America, 84
 minerals, industrial, importance of, 87-88, 90

mines

Etta, South Dakota, 14
 Homestake, South Dakota, 14
 Vlakfontein, South Africa, 123
 Miss Federal Employee, 68-69
 Mt. Holyoke College, Massachusetts,
 17-21

National Academy of Sciences,
 Committee on the Geological
 Sciences, 109-110
 National Petroleum Reserve in Alaska
 report, 128
 Naval Interlaboratory Committee on
 Editing and Publishing, 67, 93
 Naval Ordnance Test Station [NOTS],
 54, 65-68
 Naval Research, Office of, 64
 Nelson, DeWitt "Swede," 87, 101
 Nichols, Donald, 115-116
 Noble, James, 42
 Nolan, Tom, 28, 29, 38

Oberlin College, Ohio, 12-13,
 15-16, 125
 Oakeshott, Gordon, 81, 83, 99,
 120

Pacific Mineral Society, 86
 Palache, Charles, 26, 38, 46
 Parsons Engineering Company, 111
 Patterson, Clair, 55
 Patton, John, 97
 Paul, Rodman, 85-86
 Pauling, Linda (Mrs. Barclay Kamb),
 75
 Pauling, Linus, 75
 Peak, Wilford, 108
 Peck, Dallas, 128
 Peninsula Geological Society, 92
 Peterson, Don, 95, 122
 Pettijohn, Francis, 13
 Phi Beta Kappa, 15, 34
 Pickering, Muriel, 68
 Pinkerton, Jim, 93

Pond, Adela, 12
 Portola Valley Study, environmental
 geology, 120
 Powers, Howard, 51
 Pray, Lloyd, 55
 Press, Frank, 59
 Putnam, Bill, 44

Quinibek Camp, Vermont, 8, 11

Rabbitt, Mary, 92
 Radcliffe College, Massachusetts,
 23-26
 Ransome, Alfred, 42, 48
 Rapu, Sergio, 130
 Revelle, Roger, 59
 Rayen School, Youngstown, Ohio,
 10-11
 Raymond, Percy, 26
 Reining, Don, 88
 Rice, Salem, 81
 Rice, Tony, 44
 Richter, Charles, 42, 48
 Ridge, Kathleen, 97
 Robbins, Catherine, 3, 28
 Robbins, Eliza Dixon. See Chase.
 Eliza Dixon Robbins
 Robbins, Jane, 3
 Rockwell, Mabel, 64-65
 Ross, Don, 85
 Russell, Dana, 52, 71
 Russell, Mary Flower (Mrs. Dana),
 71

sand and gravel, 87-88, 90
 San Francisco Bay Region Project,
 113-115, 116, 120, 127
 Saplis, Al, 62
 Scheid, Vernon and Martha, 103
 Schenck, Hubert, 50
 Schmitt, Harrison "Jack," 124
 Schumaker, Gene, 55
 Scopes trial, 35-36
 settlement houses, 2-5
 Sharp, Bob, 47, 56

- Sharp, Jean, 71
 Silver, Leon, 55-57
 Skehan, James, 103
 Snavelly, Parke, 85
 Southern California Edison, 54, 57-58
 Spieker, Andy, 120
 Stark, Jack, 35, 47, 101
 Steinbrugge, Karl, 121
 Stock, Chester, 42, 48, 56
 Stock, Margaret, 42
 Swift, Elizabeth, 68
- Talbot, Mignon, 17, 18, 23
 Taylor, Hugh, 55
 Teachers Insurance and Annuity Association, 2
 Terzaghi, Karl, 58
 Terzaghi, Ruth Doggett (Mrs. Karl), 58
 Thayer, Tom, 44
 Thiesmeyer, Lincoln, 25-26
 Tomlinson, Dorothy, 64, 132
 Tuttle, Maria, 1
- United States Geological Survey [USGS], 28, 38, 52, 59, 79-80, 90-99, 113-121, 127-129
 United States Naval Ordnance Test Station. See Naval Ordnance Test Station [NOTS]
 U.S. Army Air Force long-range weather forecasting unit, 53
 University of California Division of War Research [UCDWR], 52
- Ver Nooy, Constance Jaeger, 12, 13, 29
 VISTA, 55
 Vitaliano, Charles, 103
 Voice of America, 109
- Waldo, Allen and Cherrie, 76, 129, 131, 132
 Wallace, Bob, 79, 91, 113, 117, 121
 Ward's Natural History Museum, Rochester, New York, 5-6
 Warren, Earl, 101
 Webb, Bob, 44
 Webster, Charlotte, 14-15, 21, 29
 Webster, Erle, 50
 Wellesley College, Massachusetts, 38
 wife, role of, 44
 Williams, Bob, 111
 Wilson, Adrian, 50
 Witkind, Irving, 90
 Wolf, John, 109
 women
 faculty wife, 44-46, 68, 69-70, 72
 geology students, 15-16
 at Harvard, 24-26
 World War I, 9, 34
 World War II, 52-53
 Worms Book Club, 68
- Yale School, Youngstown, Ohio, 7, 10
 Yellowstone Park, 8
 YMCA at California Institute of Technology, 59
- Wald, Lillian, 3

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